

SEVENTH ANNUAL REPORT

OF THE

COMMISSIONERS

OF THE

STATE RESERVATION AT NIAGARA

FOR THE FISCAL YEAR,

From October 1, 1889, to September 30, 1890.

TRANSMITTED TO THE LEGISLATURE JANUARY 29, 1891.

ALBANY:

JAMES B. LYON, STATE PRINTER.

1891.

6294

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LIBRARY.

PRESENTED BY

the Commissioners

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Class..... Book..... Accession.....

REFERENCE

Institute, or by members or holders of second class stock, who have obtained the sanction of the Committee. The second class shall include those books intended for circulation.

ARTICLE VI.—The Secretary shall have authority to loan to Members and to holders of second class stock, any work belonging to the SECOND CLASS, subject to the following regulations:

Section 1.—No individual shall be permitted to have more than *two books* out at one time, without a written permission, signed by at least two members of the Library Committee; nor shall a book be kept out more than TWO WEEKS; but if no one has applied for it, the former borrower may renew the loan. Should any person have applied for it, the latter shall have the preference.

Section 2.—A FINE OF TEN CENTS PER WEEK shall be exacted for the detention of a book beyond the limited time; and if a book be not returned within three months it shall be deemed lost, and the borrower shall, in addition to his fines, forfeit its value.

Section 3.—Should any book be returned injured, the borrower shall pay for the injury, or replace the book, as the Library Committee may direct; and if one or more books, belonging to a set or sets, be lost, the borrower shall replace them or make full restitution.

ARTICLE VII.—Any person removing from the Hall, without permission from the proper authorities, any book, newspaper or other property in charge of the Library Committee, shall be reported to the Committee, who may inflict any fine not exceeding twenty-five dollars.

ARTICLE VIII.—No member or holder of second class stock, whose annual contribution for the current year shall be unpaid or who is in arrears for fines, shall be entitled to the privileges of the Library or Reading Room.

ARTICLE IX.—If any member or holder of second class stock, shall refuse or neglect to comply with the foregoing rules, it shall be the duty of the Secretary to report him to the Committee on the Library.

ARTICLE X.—Any Member or holder of second class stock, detected in mutilating the newspapers, pamphlets or books belonging to the Institute shall be deprived of his right of membership, and the name of the offender shall be made public.

With the Compliments of

ANDREW H. GREEN, Pres't, JAMES MOONEY,
JOHN HODGE, JOHN M. BOWERS
and DANIEL BATCHELOR,

Commissioners of the State Reservation at Niagara.

HENRY E. GREGORY, Treasurer & Secretary,
214 BROADWAY, NEW YORK.

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COMMISSIONERS.

ANDREW H. GREEN, *President.*

JAMES MOONEY.
JOHN M. BOWERS.

JOHN HODGE.
DANIEL BATCHELOR.

TREASURER AND SECRETARY.

HENRY E. GREGORY.

SUPERINTENDENT.

THOMAS V. WELCH.

STATE OF NEW YORK.

No. 45.

IN ASSEMBLY,

JANUARY 29, 1891.

SEVENTH ANNUAL REPORT

OF THE

Commissioners of the State Reservation at
Niagara for the Year 1890.

To the Honorable the Legislature of the State of New York :

The Commissioners of the State Reservation at Niagara, in accordance with statutory requirement, submit their annual report for the fiscal year begun October 1, 1889, and ended September 30, 1890.

In their last three reports the Commissioners have sought to impress upon the Legislature the importance of making adequate provision for permanent improvements at Niagara, and especially for the restoration of the territory of the Reservation to a state of natural simplicity and beauty. The prosecution of this work of restoration has, for several years, presented itself as that which should principally engage the attention of the Board. As early

as 1886, it was recognized that the time had come for making a beginning in this direction. The Commissioners were not without hope that the Legislature of 1887 would receive, with some degree of favor, their requests and recommendations on behalf of the Reservation, and place at their disposal a moderate appropriation, at least, for the work which they contemplated.

On March 19, 1887, a hearing was accorded to the Commissioners by the Finance Committee of the Senate and the Ways and Means Committee of the Assembly. The Committees listened courteously to the statements and exhortations of the Commissioners, but, as it afterwards appeared, were not persuaded, since no provision was made that year for the work of restoration which, it had been hoped, the Legislature would authorize to be commenced.

In their annual report for 1887, which was presented to the Legislature February 1, 1888, the Commissioners asked for \$50,000 to enable them to proceed to give effect to their plan of restoration and improvement. Again they were disappointed, for beyond allowing \$20,000 for care and maintenance, the Legislature made no appropriation for the Reservation.

The Commissioners, on April 9, 1888, addressed a special communication to the Legislature on the necessity of making immediate and adequate provision for the protection of the southern shore of Goat Island from the erosive action of the Niagara river, and asking for \$10,000 for this purpose. This appeal, likewise, elicited no response.

In their next annual report, which was presented to the Legislature February 6, 1889, the Commissioners repeated their application for \$10,000 for the protection

of Goat Island, and further requested \$25,000 for the improvement of roads, and stated that an hydraulic elevator was much needed, the estimated cost of which was \$35,000.

On March 13, 1889, they presented themselves before the Assembly Committee on Appropriations and advocated a substantial appropriation. In the Supply Bill of that year (chapter 570) the sum of \$15,000 was allowed for "repairs of roads, bridges and betterments on the Reservation." This was much less than had been requested and required; but with it the Commissioners were enabled to make a beginning.

The Commissioners considered it to be their duty, when the appropriation of \$15,000 became available, to provide out of it permanent protection for the southern shore of Goat Island. They were confirmed in this resolution by the opinion of the State Engineer and Surveyor, which was that "unless measures are soon taken to prevent further encroachment, the results will be a continued and increasing loss of the material of the island and the consequent necessity of pushing the roadways and paths still further back from the brink." A timber wall or crib filled with stone was, for the purpose of protection, recommended by the State Engineer and decided upon by the Commissioners.

Plans and specifications were accordingly made and advertisements for bids were inserted in the local papers. Ten proposals were received. They were opened December 3, 1889, and the contracts for docking and crib-work awarded to the lowest bidders, who were responsible persons doing business in the vicinity. The inception of the work was delayed by the mildness of the winter, which interfered with the transportation

of the oak timber, while the soft condition of the roads made it very difficult to draw material across the island. In spite of hindrances, however, the operations were at length begun and proceeded with to their completion. A substantial bulwark of stone and timber now stretches along the shore of Goat Island for more than fifteen hundred feet, and will, no doubt, prove a steadfast barrier against the eroding current of the river for many years to come. The Commissioners are gratified that this long-desired improvement has at last been completed. Had the gravelly shore of the island been left much longer unprotected, it is evident that serious and irremediable damage would have ensued. To an observer on the mainland the island itself seems to be in a most insecure and defenseless position, exposed as it is on three sides to the incessant action of the descending river, and not escaping the destructive touch of both the Horseshoe and American Falls. So environed does it seem with danger that a visitor not many years since, having gazed at the terrific rush of waters, wondered "why the island did not slough off bodily into the awful black pool below." It is fortunate that the southern shore only has been seriously affected by the water.

The roads and walks on Goat Island are still in the neglected condition to which reference has so frequently been made in the reports of the Commissioners. It is hardly necessary to reiterate what has been said on this subject. Every year the necessity of repairing and improving the roads and walks, on Goat Island especially, becomes more urgent. Of the \$15,000 appropriated by chapter 570, Laws of 1889, there has been expended \$10,214.82, of which amount, \$9,330.61 has been

paid for the docking and crib-work above mentioned. The Commissioners again request a special appropriation for the repair and reconstruction of roads and walks on the Reservation. The driveways and paths are exposed, not only to the rain, but to the constantly falling spray which settles upon them, so that during a large part of the year the passage of vehicles is impeded, and walking is most disagreeable.

A parsimonious policy towards Niagara, on the part of the State, should no longer prevail. There seems to be an impression in some quarters that the Reservation has proved to be an unwise and unprofitable investment, and somewhat in the nature of an expensive luxury. The facts do not justify this conclusion. Leaving out of consideration the amount paid for the lands of the Reservation, and the other expenses incidental to the acquisition of the property, the Reservation has actually been of insignificant expense to the State. It may interest the Legislature and the public to know exactly how much the Commissioners have received from the State treasury. Appropriations have been made as follows:

By chapter 336, Laws of 1883.....	\$10,000 00
By chapter 656, Laws of 1887.....	20,000 00
By chapter 270, Laws of 1888.....	20,000 00
By chapter 569, Laws of 1889.....	25,000 00
Total.....	<u>\$75,000 00</u>

The appropriation of \$15,000 for repairs and betterments was special and extraordinary, and not having been entirely expended, is not included here.

For the actual expenses of the Commissioners and for the ordinary care and maintenance of the Reservation, since May 29, 1883, the date of the organization of the

Board, the sum of \$75,000 has been received by the Commissioners from the State.

Prior to October 1, 1887, the receipts from the Reservation were drawn upon to pay the expenses of maintenance. By chapter 656, Laws of 1887, the Commissioners were required on the first of October of that year "to pay into the treasury of the State all moneys which may be in their hands as such Commissioners, and shall, on the first day of each and every month thereafter, pay into the treasury of the State all receipts and earnings of whatever nature, other than receipts from the State Treasurer." In obedience to this law the Commissioners have remitted to the State Treasury as follows :

From October 1, 1887 to September 30, 1888.....	\$9,331 55
From October 1, 1888 to September 30, 1889.....	7,393 77
From October 1, 1889 to September 30, 1890.....	7,670 29
Total.....	<u>\$24,395 61</u>

Deducting this amount from the \$75,000 which has been appropriated as above set forth, and the balance, \$50,604.39, is what the Reservation has actually cost the State for maintenance during the period from May 29, 1883 to September 30, 1890, the close of the last fiscal year. Or, if we reckon from July 15, 1885, the date when the Reservation was opened to the public, the State has advanced only \$65,000 for maintenance and has received from the Commissioners \$24,395.61; leaving the cost of the Reservation to the State for more than five years at only \$40,604.39, or about \$8,000 a year.

It can hardly be asserted, therefore, by the most economical legislator that the maintenance of the Reservation has been burdensome to the taxpayers.

The Commissioners respectfully suggest that it should be provided by law that a sum equal to the receipts

from the Reservation, which aggregate less than \$8,000 a year, be added to the sum annually appropriated for maintenance.

To educated tourists, whether native or foreign, the disinclination of the great and prosperous State to provide means for the restoration of the scenery of the Falls of Niagara, must appear somewhat surprising, if not inexplicable. The fame of no other natural phenomenon in the world equals that of New York's great cataract. The name Niagara is as familiar to intelligent Europeans as it is to citizens of our own country. What traveler from beyond the sea, having set foot upon the western continent, fails to make a journey to the Falls of Niagara? To the poor and the rich, to the ignorant and the learned, to men of affairs as well as to men of letters and science, Niagara, it may be said, is interesting beyond all other natural objects within the confines of the republic. The Yosemite Valley "with its twenty-two wonders, any one of which a man might wisely travel a thousand miles to see," where "Nature, as in a final operatic chorus, has grouped in an overwhelming *ensemble* all her motives—snow-peaks, domes, spires, precipices, lakes, rivers and water-falls—all in the small compass of six or seven miles," the Yosemite Valley is unique for sublimity and beauty. The Yellowstone National Park is preëminently opulent in splendors and marvels of natural scenery. But can it be asserted that any single natural object on this continent is equal to Niagara in overwhelming power to thrill, fascinate and appall the beholder?

Besides the Cataract itself, there is the captivating and awe-inspiring spectacle of the Rapids, as they rush with tremendous and sonorous turbulence towards the

precipice; while beyond and below there is the wild and picturesque scenery of the Gorge, with the Whirlpool in the distance and the Rapids hastening, though with diminished speed, towards Lake Ontario.

“The helter-skelter of the Rapids at Goat Island,” said a writer, some years ago, “was more inspiring; the vast magnificence of the white and iridescent spray of the Falls themselves, those thunder-makers of the monotone that pervaded the air, might have been more striking, the blackness of the great pool more awesome, the yearning for freedom of the bondaged tree-stems in the Whirlpool, gave us a better idea of the cruel grip the water retains over all that touches it; but here, at the Rapids, the joyous rush and roar of the water, imprisoned long in the black depths of the pool above, and then suddenly broken loose, racing, swirling, hurrying past us to the calm and placid bosom of Ontario, inspired us.”

The pleasing hope may still be entertained and cherished that, at some day in the near future, the Whirlpool and the Rapids below, may be included within the public domain at Niagara.

But even though these essential parts of the Niagara spectacle remain beyond the protection of the State, reference may again be made to the general approval which was accorded to the action of the State in discontinuing private control of the territory adjacent to the cataract, and to the satisfaction so widely felt, that fees, tolls and charges are no longer exacted from a submissive and uncomplaining public for the privilege of approaching and even looking at the Falls of Niagara.

It may be that there are persons who even at this day criticise the State for establishing the Niagara

Reservation; but as time goes on, their complaints will be heard with diminishing frequency, until there shall be commendation only for the great State that rescued from private ownership the islands and shore of the Niagara river and made them free to all mankind forever.

Indisputable evidence of the popular interest in the preservation of Niagara was disclosed in 1889, when an electric company sought to secure the right to utilize the water-power of the cataract for commercial purposes. The emphatic condemnation which that project received was significant, and could not fail to be gratifying to all who are interested in Niagara.

The water-power of the river is, however, soon to be made use of in a highly remarkable and original way, under the direction of the Niagara Falls Power Company. This company is composed of prominent business men at Niagara Falls, and from the circular which they have recently issued, the following information is derived:

Beginning at the water level below the falls, a tunnel is to be constructed, twenty-nine feet in height by eighteen feet in width. It will extend through the solid rock underneath the village to the upper river at a point about one mile above the falls. From this point the tunnel is to continue parallel with the shore of the river one and one-half miles, at an average depth of 160 feet below ground, and about 400 feet distant from the navigable waters of the river, with which it is to be connected by means of surface conduits or canals, through which the water from the river is to enter and be drawn through the shafts and wheel-pits into the great tunnel below. The water will fall upon turbine

wheels in the pits, and the power developed thereby will be brought to the surface and delivered to mills or factories, or be transmitted by cable, pneumatic tube, or electricity, to other points. The company has purchased about 1,300 acres of land near the Reservation. This land will be used for mill-sites and dwellings for operatives.

By the act of incorporation the power granted to the company by the State "shall not in any sense be construed as permission to cross, intersect or infringe upon any part of the lands of the State Reservation at Niagara."

A communication from the State Engineer and Surveyor concerning the effect upon the American Fall of the diversion of a large amount of water of the river into the proposed tunnel, is appended to this report.

It is only within the latter half of this century that to protect and preserve extraordinary phenomena in natural scenery from injury and desecration, has come to be recognized as one of the functions or prerogatives of government. It would be interesting to trace the genesis and evolution of the sentiment that demanded and sanctioned this exercise of authority, as it would be interesting and instructive to trace the influence of natural scenery in literature and upon the life and character of the people. A contemporary writer, referring to the lack of appreciation for the sublime in early English poetry, attributes it to the absence of romantic scenery in the southern and midland counties of England which contributed most to the national literature. "Had there been a cataract like Niagara in the Severn or the Thames, the emotion of the sublime would perhaps have been earlier developed."

Although the American people are mainly a practical folk, they can not with justice be accused of total indifference to the wonders of natural scenery within the boundaries of their immense national domain. It was in 1864, more than a quarter of a century ago, that the Yosemite valley was granted by the United States to the State of California, "with the stipulation nevertheless, that the said State shall accept this grant upon the express condition that the premises shall be held for public use, resort and recreation, and shall be inalienable for all time." The State of California thus became the trustee of the Yosemite for the benefit of the people. It has been recently asserted that the management of the wonderful valley has not been as careful, intelligent and vigilant as it should have been, and that the scenery has consequently suffered injury. So strong is the feeling that the Yosemite valley is a national treasure that it is not unlikely that the National Government, at no distant day, will resume the title to the property. A bill providing for the enlargement of the public area surrounding the valley was introduced into the Fifty-first Congress and passed during the first session.

In 1872, that tract of country in the Northwest, about 3,500 square miles in extent, known as the Yellowstone National Park, was, by an act of Congress, "reserved and withdrawn from settlement, occupancy or sale under the laws of the United States, and dedicated and set apart as a public park or pleasuring ground for the benefit and enjoyment of the people."

In 1885, the State of New York made Niagara free, and the same year established a forest commission, whose duty it is to manage the forest preserve and

to protect the forests of the State from injury and destruction.

Our State is rich in natural scenery of great variety and of wide celebrity—the Hudson, from the northern wilderness to the beautiful bay and harbor of New York, scenically and historically so interesting; the Catskills; the Adirondack region, with the solemn majesty of its mountains, the placid loveliness of its picturesque lakes, its once extensive forests now so largely devastated; Lake George and Lake Champlain, so attractive to the student of history and the lover of nature; the Ausable Chasm, Trenton Falls, Watkins Glen, the St. Lawrence, with its pleasing island scenery, and the lake region in Central and Western New York.

But the State's most stupendous and splendid possession is Niagara. To improve Niagara is manifestly impossible; but to provide for the restoration of the scenery of the Falls to something like the original wildness and beauty in the midst of which the wonderful spectacle first burst upon the astonished gaze of Hennepin—this surely is prompted by considerations of State pride and of the fitness of things, and may properly commend itself to the Legislature.

The Commissioners are of the opinion that there should be no further delay in proceeding with work of a permanent character at Niagara; that it would be short-sighted and injudicious to refuse to grant a reasonable amount for this purpose. The work contemplated is not such as can be objected to for artificiality or extravagance. The Commissioners have no intention of asking for money to spend for such embellishments as would be appropriate in an urban park. The word "improvements" is less accurately

descriptive of what they have in view, than the word "restoration." Portions of the river bank that have been denuded or mutilated stand especially in need of restoration. The work of grading, sodding, filling and planting necessarily involves considerable expense.

The removal of old raceways should no longer be postponed. The one between the Grove and Bridge street is in an objectionable condition and should be closed, and the entire strip of territory from Water street to the margin of the river restored as nearly as may be to the condition it was in 200 years ago. Prior to 1885 this plot was almost completely covered by buildings, the removal of which left the surface uneven and unsightly. It could be made attractive by a small expenditure.

During the year a nursery for young trees has been established on Goat Island. Maples and elms have been planted along the river road and in the plot of ground near Port Day. This is but the beginning; many more plantations are required.

The new stairway to the spring on Goat Island is a substantial structure that should be much appreciated by the public.

By Chapter 570, Laws of 1889, the State Engineer and Surveyor was "authorized to make such surveys and maps and to set such monuments as may be requested of him by the said Commissioners."

In compliance with this provision, and upon the request of the president of the Board, the State Engineer deputed one of his assistants to make surveys and to set monuments at Niagara. The work was carefully done by a capable engineer and is described in the report which forms a part of the appendix.

In addition to the foregoing, little, if anything, remains to be said concerning the work of the year. In the report of the Superintendent, hereto appended, will be found details of repairs and operations incidental to the maintenance of the Reservation.

Mr. Samuel Parsons, Jr., has been appointed landscape architect to the Board.

Commissioners Mooney and Hodge have been appointed an Executive Committee of the Board.

The folding guide, including a map of the Reservation and suggestions to visitors, which had been prepared under the direction of the President of the Board, was issued in the spring. Of the fifty thousand copies printed, about thirty thousand have been distributed. They are to be obtained at the entrances to the Reservation, and at places in the village. They have given satisfaction and answer the purpose for which they were issued.

The Reservation has been visited by a larger number of persons than last year, and the receipts from the inclined railway, which is the principal source of revenue on the Reservation, have been in excess of those of last year by \$611.40. The rate is five cents each way, or ten cents for the round trip.

The monthly receipts from the railway were as follows :

1889.

October.....	\$314 60
November.....	85 85
December.....	39 95

1890.

January.....	35 50
February.....	43 65
March.....	51 15
April.....	113 15

COMMISSIONERS OF THE STATE RESERVATION AT NIAGARA. 17

May.....	\$220 55
June.....	370 60
July.....	1,384 15
August.....	2,286 50
September.....	739 85

Total.....	\$5,685 50
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Receipts from other sources :

Rentals.....	\$1,835 00
Sales.....	14 00
Interest on balances in bank.....	135 79

Total receipts for the year.....	\$7,670 29
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The receipts and earnings have been transmitted to the State Treasurer monthly, except interest on balances in bank, which has been remitted to the same official quarterly.

The Comptroller has honored a requisition made upon him quarterly for a fourth part of \$25,000, appropriated by chapter 569, Laws of 1889, for the care and maintenance of the Reservation.

Of the treasurer's report, herewith submitted, exhibiting in detail all receipts and disbursements for the fiscal year ended September 30th, 1890, the following is a summary :

Balance on hand September 30, 1889.....	\$455 68
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RECEIPTS.

Inclined railway	\$5,685 50
Rentals	1,835 00
Sales	14 00
Interest	135 79
	<hr/>
	7,670 29

From State treasury (on account of chapter 569, Laws of 1889)	\$25,000 00
From State treasury (on account of chapter 570, Laws of 1889)	10,214 82
Total	<u>\$43,340 79</u>

PAYMENTS.

Pay-rolls at Niagara Falls..	\$14,613 02	
Labor, materials, etc.....	5,733 90	
Commissioners, treasurer, traveling expenses, etc...	1,576 79	
	<u>\$21,923 71</u>	
Remitted to State Treasurer.....	7,670 29	
Repairs and betterments.....	10,214 82	
	<u>39,808 82</u>	

Balance September 30, 1890..... \$3,531 97

Total receipts since organization of the Commission, 1883	\$152,666 21
Total disbursements.....	<u>149,134 24</u>

Balance

\$3,531 97

The following is "an estimate of the work necessary to be done and of the expenses of maintaining said Reservation for the ensuing fiscal year," ending with September 30, 1891:

MAINTENANCE.

Salaries, office and traveling expenses	\$4,300
Reservation police, watchmen, etc.....	5,700
Mechanics and laborers.....	7,000
Materials, tools, trees, etc.....	7,000
Miscellaneous	1,000
Total	<u><u>\$25,000</u></u>

IMPROVEMENTS.

Repairs of roads, grading, etc.....	\$25,000
Hydraulic elevator	35,000
	<hr/>
Total	\$60,000
	<hr/> <hr/>

ESTIMATED RECEIPTS FROM OCTOBER 1, 1890, TO SEPTEMBER 30, 1891.

Inclined railway	\$5,700
Cave of the winds.....	1,200
Ferry and steamboat landing.....	500
Carriage service.....	100
Baggage room.....	50
	<hr/>
Total	\$7,550
	<hr/> <hr/>

ANDW. H. GREEN,
 JAMES MOONEY,
 JOHN HODGE,
 JOHN M. BOWERS,
 DANIEL BATCHELOR,

Commissioners of the State Reservation at Niagara.

HENRY E. GREGORY,
Secretary.

REPORT OF THE SUPERINTENDENT
OF THE
STATE RESERVATION AT NIAGARA
FOR THE
Fiscal Year Ending September 30, 1890.

Report of the Superintendent.

To the Board of Commissioners of the State Reservation at Niagara :

GENTLEMEN.—I respectfully submit the annual report of the superintendent.

INCREASED NUMBER OF VISITORS.

During the fiscal year ending September 30, 1890, the number of visitors to the Reservation has been larger than during any other year since the establishment of the Reservation. There has been a marked increase both in the number of summer tourists and in the number of excursionists from New York and other States. Owing to the many entrances to the Reservation and the passing in and out of visitors, no count of the actual number of visitors has been attempted. Three thousand three hundred and thirty-six cars of excursionists arrived during the summer months; estimating sixty persons to each car, the number of excursionists would be 200,160. The excursion season is confined almost exclusively to the months of June, July and August.

A careful observation of the visitors to the Reservation during the entire year leaves the impression that 500,000 visitors per annum is a fair estimate, and a considerable portion of the whole number are residents of the State of New York.

Assuming 500,000 visitors per annum to be a fair estimate, and that there has been saved to each the amount of the tolls formerly charged upon the grounds now included within the Reservation, to wit: Fifty cents admission to the islands, twenty-five cents admission to Prospect Park and twenty-five cents for the use of the stairway at the inclined railway in Prospect Park, aggregating one dollar for each visitor, there has been at this time saved to the public, the amount paid by the State for the lands included within the State Reservation at Niagara and the cost of maintenance up to the present time.

Notwithstanding the large number of visitors, little difficulty has been experienced in the management. No disorder has occurred, no injury has been done to the public property, and, notwithstanding the dangerous character of the locality, no accident has occurred within the Reservation during the year.

The receipts from the inclined railway, sales and rentals received by the superintendent during the fiscal year amounted to \$7,534.50. It amounts to nearly one-half as much as the total expenditures for maintenance. If to the present sources of revenue were added a much needed elevator for ascending and descending the cliff between the American and Horseshoe Falls on Goat island, operated by the State like the inclined railway, for a nominal charge and having a free stairway attached, the aggregate revenue from the inclined railway and a suitable elevator, would go far toward paying the annual cost of maintenance.

AN ELEVATOR NEEDED.

The necessity of a commodious elevator to take the place of the Biddle stairway at the Cave of the Winds, has been commented upon in former reports of the superintendent. Visitors to the Reservation desire to obtain the view to be had from the base of the cliff on Goat island, between the American and the Horseshoe Falls. The great drawback to the enjoyment of visitors at this point is the labor of descending and ascending a narrow winding stairway eighty feet in height. The structure is old and unsuitable for the accommodation of the number of persons who desire to see the falls from this favorable point of view. The *debris* slope under the cliff between the American and Horseshoe Falls commands unrivaled views of the cataract. It is the central point from which the magnificent scenery on either hand may be viewed to advantage. Near the edge of the water a walk of a quarter of a mile in extent can be constructed from the American to the Horseshoe Falls. Such a footway would be as free from danger as the walk from the steamboat landing to the base of the American Fall at Prospect Park, which is now visited by more than one hundred thousand people each year. The general public are practically debarred from the enjoyment of the views of the scenery to be obtained from the slope between the two falls, for want of proper facilities for descending and ascending. An hydraulic elevator could be operated to advantage in the locality. Plans and estimates for such a structure have been procured from Messrs. Otis Brothers, of New York, and the Howard Iron Works, of Buffalo, and the Washburn Machine shop, Worcester, Mass. A bill providing for an appropriation for the construction of an elevator was passed by the Assembly in 1886. An elevator would be more safe and sightly than the present structure, and would not only be a means of great enjoyment to the public, but a sure and unobjectionable source of revenue to the State.

THE PROTECTION OF GOAT ISLAND FROM EROSION.

The most important work of the year has been the protection of the southern shore of Goat island from the erosion, caused by high water and floating ice. Many of the deflecting piers, built for the purpose in former years, had been carried off by the rapid current, and the island itself, composed mainly of quicksand and gravel, was being rapidly washed away, the erosions in some places impinging upon the footpaths and roadways, carrying off the trees and vegetation upon the southern shore, and causing the bank to look raw and unsightly.

An examination of the locality was made by the State Engineer and Surveyor, and a plan proposed for the protection of the shore by means of timber crib-work and docking, filled with stone.

Sealed proposals were received and the contract awarded to the lowest bidders, Phillips & Young, of Niagara Falls, N. Y., at \$4.25 per linear foot for the docking and \$5.97 per linear foot for the crib-work completed.

The work was commenced March fifth and completed July 11, 1890. There are 1,538 linear feet of crib-work at \$5.97, amounting to \$9,181.86, and thirty-five linear feet of docking at \$4.25, amounting to \$148.75. Total amount for the docking and crib-work, \$9,330.61.

The Assistant State Engineer and Surveyor has examined the docking and crib-work, and pronounced the work excellent in every respect.

The southern shore of Goat island is now free from the danger of erosion in the future. As the damage to the island in the past was great and irreparable, the importance of the work done can not be overestimated.

Some filling will be required, back of the crib-work and docking, the raw embankment covered with loam, and planted with vines, shrubs, willows and other suitable trees, and in a few years, the damaged bank will be restored to a semblance of its natural condition.

THE STORM OF JANUARY 13, 1890.

The violent wind of January 13, 1890, caused serious damage to the Reservation. The bridges to the Three Sister islands, were endangered by the high water which flowed over the Three Sister islands, and over the bridge between the first and second Sister island. The bridges were also in great danger from floating logs, several of which were piled upon the islands and against the cables of the outer bridge. The gravel walks on the islands, and a large quantity of the soil were swept away. Thirty-six trees were blown down on the islands, to-wit: eleven basswood, five elms, six beeches,

four ironwood, three maples, two white cedar, two red cedar, one pine, one white oak and one hemlock. Two trees were prostrated in Prospect Park. Fourteen of the trees were each two feet in diameter. Two of the elms were three feet in diameter.

THE EXCLUSIVE LIVERY PRIVILEGES.

The Miller & Brundage Coach Company (limited), the company having the exclusive privileges at the railroad stations, have during the year obtained control of another toll place, store and photograph gallery, making three toll places, two photograph galleries, and five stores or bazaars, in all owned or controlled by that company. The propriety of granting an exclusive livery privilege to persons so identified with toll places, photograph galleries and bazaars, has been the subject of correspondence between the railroad officials and the superintendent of the Reservation during the past three years. After communicating with the president of the board, on February sixth last, the superintendent went to Albany and brought the matter personally to the attention of the Governor of the State, the Deputy Attorney-General, and the Secretary of the Board of Railroad Commissioners.

The special report of the superintendent in relation to the matter is herewith submitted.

LICENSED CARRIAGE DRIVERS.

Eight public carriage stands have been designated upon the public streets within the Reservation, in the territory outside of the Prospect Park, and the islands, at points under the supervision of the Reservation police. The arrangement is a convenience to the traveling public and a benefit to the carriage drivers. The privilege of using such stands is subject to revocation in case the driver violates the ordinances of the Commissioners. During the year sixteen complaints have been made against licensed carriage drivers. Five drivers have been excluded from the Reservation for violation of the ordinances.

ENFORCEMENT OF VILLAGE ORDINANCES.

During the past year the trustees of the village have refused to grant licenses to persons, commonly known to be improper persons, to act as drivers of carriages used for hire.

The ordinances relating to soliciting have been more rigorously enforced. The proprietors of prominent hotels have coöperated with the village authorities in preserving good order and enforcing the village laws. As a result, visitors upon the streets, between the depots and the Reservation, have not been subjected to so much solicitation and annoyance as in former years.

THE RESERVATION CARRIAGE SERVICE.

The Reservation carriage service has been in successful operation during the season. In July and August additional carriages were required to meet the public demand. The existence of the service is now generally known. It is a great convenience to the traveling public and apparently answers the purpose for which it was established.

NURSERY FOR YOUNG TREES.

Young trees, 1,122 in number, have been taken from the thicket on Goat Island and planted in the nursery plot. They comprise 636 maples, 130 ash, ninety-one basswood, fifteen elm, twelve ironwood, one beach and four osier. Seventy-five Norway spruce and seventy-five white cedar have also been procured for the nursery. The young trees, with few exceptions, have made rapid growth. A great variety of young trees and shrubs, suitable for placing in the nursery, can be obtained in the woods on Goat island.

TREE PLANTING.

One hundred and five maples, 156 elm and eighteen walnut trees have been procured and planted, as directed by the committee, at the upper end of the Reservation, along River street and on the bluff above Mill street. The trees started vigorously during the past season and apparently will thrive in the locality.

GRADING AND PLANTING.

Unnecessary and unsightly buildings having been removed from the river banks, the work of grading and planting may be carried forward as soon as the necessary appropriation shall be made.

The bank of the river should be graded and planted as soon as possible. This is particularly true of the strip of land between Cascade street and Mill street, from which buildings have been recently removed. The surface is traversed by raceways. It is bare and uneven, with large hotels and other structures standing out prominently in the background. The river bank in this locality is almost entirely denuded of trees, and it mars the appearance of the Reservation, especially when viewed from the islands, or the Canadian shore. Judicious planting would partially shut out the village from the river bank. Bath island was almost entirely covered by buildings when the Reservation was established. With the exception of the office building, all have been removed, and considerable grading and filling done, but the island is almost bare of trees or shrubbery, and presents a bleak and unnatural appearance. It should be properly graded and planted as soon as possible.

In Prospect Park and in some other places where little grading is called for, planting may now be done to replace dead trees, and trees recently prostrated by storms.

The filling of the upper raceway between Bridge street and Mill street, and the grading of the bank of the river in that locality could be carried forward with advantage during the coming season. The removal of the retaining walls, tail races and overflows in the vicinity, would greatly improve the appearance of the Reservation.

ROADS AND WALKS.

The roads within the Reservation are mainly common dirt roads and are entirely inadequate and unsuitable. A gutter has been made along the road on the southern side of Goat island, and tile placed at intervals to carry off the surface water. The gravel walks on the Three Sister islands, and on Luna and Goat islands have been repaired and a large quantity of gravel placed upon the roads on Goat island, but the roads are so badly constructed, and the evaporation of the rain and spray so hindered by the shade of the trees along the roads, that the labor and materials put upon the present roads are practically wasted. Properly constructed roads, such as are eventually contemplated, once established, would cost little for maintenance. Public economy, as well as State pride, urge the early adoption of measures for the permanent improvement of the roads within the Reservation.

There are about two miles of village streets within the Reservation upon which the village authorities have made no repairs since the establishment of the Reservation, although the streets are used for the ordinary traffic of the community. Some repairs have been made by the State but the highways are now much worn, and to put them in good condition will require a considerable outlay.

SIDEWALKS.

The main walk in Prospect park, from the entrance, to the high bank of the river, 649 feet long, six feet ten inches wide has been rebuilt; a walk 945 feet long, has been constructed from the entrance at the new suspension bridge to Prospect Park, 224 feet of six foot sidewalk has been constructed on Cascade street, and 200 feet of sidewalk ten feet wide on Bridge street, and the crosswalks and sidewalks within the Reservation repaired.

Three hundred and twenty-four feet of guard railing have been constructed in connection with the sidewalk along the rapids on Cas-

cade street, the crib-work protecting the shore immediately above the bridge to the islands, has been repaired, and a walk constructed at that point.

BUILDINGS.

One hundred and ten linear feet of the frame structure covering the inclined railway have been rebuilt, the roof covered with sheet-iron, and the structure repainted.

The floor of the veranda on the south side of the inclined railway building has been renewed, and the roof of the Cave of the Winds building reshingled.

The old and decayed pine timbers supporting the machinery in the wheelpit, at the inclined railway, have been removed and replaced by a framework of the best quality of oak. A toilet room was constructed in the inclined railway building, and the pine floor, which was old and worn, replaced by a maple floor of the best quality.

A suitable stone spring house has been erected about the spring on Goat Island, which protects the spring from falling leaves and adds to the convenience of the public.

STAIRWAYS.

A new stairway to the spring on Goat Island was completed August 16, 1890. It consists of four flights and four landings. The railing and treads are of the best quality of oak; the risers of iron, and the stairway is supported by substantial stone piers and retaining walls.

The stairways on the islands are now in good condition, but the winding stairway leading to the Cave of the Winds is inadequate and unsuitable and should be replaced by a more sightly and convenient structure.

THE BRIDGES.

May fifteenth the annual examination of the bridges to the islands and the various structures within the Reservation was made. The report of the examiners has been submitted by the superintendent.

The repairs recommended have been made on all of the bridges to the islands. Eight additional pairs of iron needle-beams have been procured for the bridge from Bath Island to Goat Island. Material has also been procured for painting the bridges.

The bridges from the main shore to Goat Island will require replanking before another season. The bridge to Luna Island is old and unsuitable and should be replaced by a new structure. Measurements of the locality have been submitted by the superintendent.

MISCELLANEOUS.

One thousand loads of gravel have been placed on the midway road on Goat Island. Six hundred loads of gravel have been placed upon the road on Bath Island and 500 loads of gravel upon Bridge street and Cascade street, adjacent to the entrance to the bridge to the islands.

Two hundred loads of gravel have been placed upon the new walk in Prospect park, leading from the entrance at the new suspension bridge to Prospect Point. One hundred yards of gravel have been placed on the road and walk in Prospect Park, adjacent to Prospect Point, and thirty-nine yards of broken stone placed on Canal street, between Falls street and Niagara street, and considerable filling done on the slope at Canal street, between Falls street and Bridge street.

The roads within the Reservation have been trimmed, Prospect Park and the territory on the main shore kept mown during the summer season, the water-pipes and drinking fountains have been repaired, 200 settees repaired and fifty settees repainted.

The terrace in the lower grove in Prospect Park, on which seats are placed for visitors during the summer season, has been dressed with a covering of phosphate and loam, and the territory at the eastern end of the Reservation plowed, graded and seeded down.

The trees overturned by the storm of January 13, 1890, have been cleared away. A number of dead trees in Prospect Park, which were considered dangerous, have been removed and a large quantity of fallen branches removed from the thicket on Goat Island.

INCLINED RAILWAY.

A new manilla cable was attached to the cars of the inclined railway, electric signal bells provided, and four pairs of new wheels for the cars procured.

SETTEES.

Fifty additional settees, for the accommodation of visitors during the summer season, have been procured.

THE MAPS AND GUIDES.

During the summer months 25,000 of the maps and guides have been gratuitously distributed. They give satisfaction to the public and visitors are anxious to obtain them. A number of the maps and guides have been framed and placed at the entrances to the Reservation and in the public buildings for the guidance of visitors.

ELECTRIC LIGHTING.

During the summer months Prospect Park was lighted by electricity, at the expense of citizens of Niagara Falls, as authorized by the Board of Commissioners.

The lighting of the grounds added largely to the enjoyment of the public, but the service was not as reliable or efficient as it should have been. Prospect Park was kept open until 11 o'clock p. m., and no difficulty was experienced in the management.

EMPLOYEES.

The number of regular employés is ten. The additional laborers employed during the several months of the year were as follows: October, laborers nine, teamsters two; November, laborers nine, teamster one; December, laborers eight, teamster one; January, laborers eight; February, laborers eight, teamster one; March, laborers eight, teamster one; April, laborers nine, teamster one; May, laborers fourteen, teamster one; June, laborers fourteen, teamster one; July, August and September, each, laborers eleven, teamster 1.

THE SURVEYS.

November 25, 1889, the State Engineer and Surveyor made a personal examination of the locality of the proposed roadway from the Falls to the Whirlpool.

The office on Bath Island and such information and assistance as could be afforded were extended to the State Engineer and Surveyor while making the surveys for the proposed roadway to the Whirlpool and of the crest of the Falls.

A number of additional stone monuments have been placed in the neighborhood of the Falls. Stone monuments marking the boundary line of the State Reservation, on the pier at Port Day, have also been placed in position.

TABULAR STATEMENTS.

A statement of the excursions to the Reservation for the year ending September thirtieth is hereto appended; also, detailed statements of the receipts and expenditures by the superintendent, the amounts of the pay-rolls for each month, classifications of the pay-rolls and expenditures, and the number of persons employed during the year.

Respectfully submitted.

THOS. V. WELCH,
Superintendent.

SECOND SPECIAL REPORT

ON THE

MANAGEMENT OF THE EXCLUSIVE LIVERY PRIVILEGES AT THE
NIAGARA FALLS STATIONS OF THE RAILROAD COMPANIES,
AND POINTS OF INTEREST WHERE ADMISSION FEES ARE
CHARGED AND "COMMISSIONS" PAID TO CARRIAGE DRIVERS;
SUBMITTED TO THE COMMISSIONERS OF THE STATE RESERVA-
TION AT NIAGARA BY THOMAS V. WELCH, SUPERINTENDENT.

To the Commissioners of the State Reservation at Niagara:

GENTLEMEN.—The following preamble and resolution, adopted at a meeting of the Commissioners September 6, 1887, were transmitted to me by the secretary of the board:

"The superintendent having reported to this board that he was credibly informed that it was the custom of the hackmen who furnish carriages to strangers, to drive them in the first instance to the Whirlpool and other points outside the Reservation where there are entrance fees and articles are kept for sale, in many cases engrossing the time of visitors in this way, so that they have not sufficient time thereafter to visit the Reservation, and there being reason also to believe that the hackmen who do these things receive commission on such entrance fees or sale of merchandise, and that in this way visitors are imposed upon and the benefits of the Reservation in a large measure lost to the public; therefore,

"*Resolved*, That the superintendent be authorized to bring this subject to the attention of the railroad companies to and from whose trains public carriages are driven, and who furnish special convenience to some of such hackmen, in allowing them to solicit custom within the yards and upon the trains, and that he report to the board the result of his conference with said companies, and such action as he deems necessary to prevent further imposition upon the public."

In compliance with the foregoing resolution, I, at that time, brought the subject to the attention of the railroad companies, as authorized and submitted a special report to the Board of Commissioners, in relation thereto, dated December 8, 1887, a copy of which is hereto appended.

From the investigation then made by the superintendent, it was ascertained, that the exclusive privilege of entering the yards at railroad depots at this place, had been secured by a combination of the livery establishments of Charles W. Miller, of Buffalo, and James T. Brundage, of Niagara Falls, the latter being largely interested in stores, a photograph gallery, and points of interest, where entrance fees were collected and commissions on admission fees and on goods purchased by visitors, secretly paid to carriage drivers. The company thus formed was given the exclusive privilege of soliciting business upon railroad trains, and in the depot yards. The omnibuses, baggage wagons and carriages, of all other persons were rigorously excluded by the railroad companies.

The drivers employed by the livery company, were paid ten dollars per month, and, in order to earn livings for themselves and their families, they systematically conveyed visitors to the toll places, stores and photograph gallery owned or controlled by the manager of the company in order to obtain the commissions paid at such places.

Visitors were often conveyed to such places without their direction before being taken to the Falls, and the islands, and their time so engrossed that they had no opportunity thereafter to visit the Reservation; strangers were thus imposed upon, the Reservation made a secondary object of visitation, and visitors received wrong impressions concerning it.

When these facts were brought to the attention of the general passenger agent of the New York Central and Hudson River railroad by the superintendent, he stated that it was not the purpose of the company to renew the arrangement, giving C. W. Miller & Co. the exclusive privileges at the Niagara Falls station, unless they could satisfy all concerned that the business could be conducted in an entirely neutral spirit and without any identification of any character, with particular hotels, bazaars, or points of interest, and that the company was not aware at the time the contract was made with Mr. Miller that he was to associate with himself in business, any person who was so identified.

The contract was renewed for the year 1888, subject to the restrictions suggested in the correspondence between the general passenger

agent and the superintendent of the Reservation, as given in the special report hereto annexed.

The restrictions referred to required that the business should be conducted in an entirely neutral spirit and without identification of any character, with particular hotels, bazaars, or points of interest.

Since the matter was first reported by the superintendent to the Commissioners, and by their direction by him brought to the attention of the railroad companies, some improvement has been made in the methods of the livery company. Their drivers are now paid entirely by salary, instead of ten dollars per month and "commissions," as formerly, and since October 26, 1887, their passengers, as a rule are conveyed first to the Reservation grounds, instead of being taken first to the Whirlpool and Whirlpool Rapids, and the toll gates, stores and photograph galleries at those points, but the restrictions outlined in the correspondence between the general passenger agent of the New York Central and Hudson River railroad, and the superintendent of the Reservation, if embodied in the contracts for the years 1888, 1889 and 1890, have been to the knowledge of the superintendent, deliberately evaded and ignored by the livery company.

It has been the practice to sell carriage tickets and tickets for the toll places, owned or controlled by Miller & Brundage, one or both of them, as the case may be, at the office of C. W. Miller in Buffalo, on the railroad trains, in the railroad yards and depots, and at the office of Miller & Brundage at this place, and visitors, without being conveyed to hotels, have been hurriedly taken to the toll places, stores and photograph galleries, owned or controlled by that firm. Thus the people coming here to visit the Reservation have been turned over to one firm, to be handled in various ways, for financial benefit. The result has been an imposition upon the traveling public and an injury to many business people in the community, who have been wrongfully discriminated against by the operation of the exclusive livery privileges granted by the railroad companies, and the object of the State in establishing the Reservation has been, to a certain degree, defeated.

During the past season the proprietors of hotels, finding the operations of the exclusive livery privileges detrimental to the general business of the place, made complaint to the railroad companies and were assured that thereafter no soliciting for carriages, or discrimination against hotels, would be allowed upon the railroad trains. Notwithstanding such assurance, it is evident, from complaints made to this office, that methods detrimental to the public interests, and injurious to the State Reservation, are practiced by Miller & Brundage.

The superintendent has, from time to time, brought the abuses complained of to the attention of the president of the Board of Commissioners and to the notice of the railroad company, and I beg leave to submit the following correspondence in relation thereto:

NIAGARA FALLS, N. Y., *September 2, 1889.*

HON. ANDREW H. GREEN, *President of Commission, 214 Broadway, New York city:*

DEAR SIR.—I enclose to you a statement which I have received from A. Baron, 1220 Dolman street, St. Louis, Mo. Complaint was first made to me by Miss Woods, the lady referred to in the statement. As the circumstances occurred upon the Reservation, I wrote to Mr. Baron for the facts of the matter. I have mailed a copy of Mr. Baron's reply to Miller & Brundage. If Mr. Baron's statement is true it is evident that,

1. Hack tickets continue to be sold upon the trains by Miller & Brundage.
2. Passengers are driven only to stores controlled by Miller & Brundage.
3. Ladies employed in other stores are branded disreputable persons
4. Contracts with passengers are not fulfilled.
5. Hotels are injured in their business.

I have not as yet excluded from the Reservation the driver who refused to allow Mr. Baron to alight, as the coach company and not the drivers are mainly responsible for the existing state of affairs, any action in the matter, to be effectual, should be taken against the coach company.

As Mr. Theodore Voorhees, assistant general superintendent, N. Y. C. & H. R. R., wrote to you concerning this subject, in June last, it may be well to bring Mr. Baron's statement to his notice, or to that of General Superintendent Toucey.

Very respectfully.

THOMAS V. WELCH,
Superintendent.

ST. LOUIS, *August 27, 1889.*

MR. THOS. V. WELCH, *Niagara Falls, N. Y.:*

DEAR SIR.—Have just arrived from the east and hasten to acknowledge your favor of the 19th inst. The facts regarding the case reported by Miss Woods are as follows:

On the 16th inst. as the train from Buffalo to Niagara neared the latter place, an agent of some company, who wore a uniform and cap

with gilt braid, solicited the passengers to take carriages for the purpose of seeing the sights. My friend and I engaged a carriage, for which we paid \$4.50, which was demanded in advance, with the understanding that we were to be taken all around, to the Indian Reservation, as well as the State Reservation, to a hotel which we designated for supper, and thence to the depot. The \$4.50 included bridge tickets. On coming from the Falls we noticed a store, the first of the kind we had seen, which exhibited Indian trinkets for sale. My brother-in-law desiring to purchase a few trifles requested the driver to stop. This the latter refused to do. On our questioning him, he laughed rather insinuatingly, and as we noticed several young ladies in attendance, we came to the conclusion that the place was not reputable until we recollected also seeing an elderly woman, who was unmistakably a *lady* whereupon we insisted upon stopping. The driver said his "boss" would not allow him to stop there, but that he would stop around the corner. He did so, and we went into Miss Woods' store, and on questioning her regarding the matter, were confirmed in what we suspected, namely, that she paid no commission to the company in whose service our driver was.

For myself, I will state that the contract between the cab company and ourselves, was not adhered to; on asking to be driven to the Indian Reservation, the driver said it was too late. After passing a place where we returned our tickets, an official of the company prohibited the driver from stopping at any hotel, to enable us to get supper, and we were compelled to drive straight to the depot, and hunt up some place where we could get a lunch. My brother-in-law who was with me lives in Berlin, Germany, and if necessary will corroborate this statement.

Yours.

A. BARON,

1220 Dolman St., St. Louis, Mo.

NEW YORK, September 7, 1889.

HON. ANDREW H. GREEN, *President, 214 Broadway, New York :*

DEAR SIR.—Your favor of September third, addressed to Mr. Toucey, duly received. The accompanying communication I have sent to Buffalo in order that it may be made the subject of a careful investigation.

I hand you enclosed card issued by the Miller & Brundage Coach Company, Niagara Falls, which please return. I have had a long

interview with Mr. Miller in regard to the method of conducting their business. I found that he had issued instructions to his drivers not to stop at shops where commissions had formerly been paid, his idea being to protect the passengers in his carriages from the imposition which had heretofore been inflicted on the public. I have explained to him, that it was not a part of his duty to undertake to reform the morals of the shop-keepers of Niagara Falls, and that he had better cease the effort at once.

Hereafter the drivers will carry passengers to any point, or any shop, or any hotel that they may desire to go without question or discrimination. Further, I can assure you that there is no soliciting whatever for carriages on our trains.

Trusting that this will prove satisfactory, I am,

Yours truly.

THEODORE VOORHEES.

NIAGARA FALLS, N. Y., *September 16, 1889.*

HON. ANDREW H. GREEN, *President Commission:*

DEAR SIR.—I have received a copy of the reply of the seventh instant of Theodore Voorhees, assistant general superintendent New York Central and Hudson River Railroad, in relation to the complaint of A. Baron, 1220 Dolman street, 'St. Louis, Mo., against Miller & Brundage, forwarded by you September third, in which Mr. Voorhees states that he has forwarded the complaint to Buffalo for investigation, and that he has had a long interview with Mr. Miller concerning it. These frequent complaints, should be investigated upon the ground, at Niagara Falls, in the presence of all the parties concerned, not in Buffalo or New York, in the presence of one of the parties only, as has been the custom. If Mr. Voorhees will bring the persons in dispute face to face here, he will at once see the true situation, and will be able to take such action as will prevent all complaints in the future.

Mr. Voorhees is undoubtedly anxious to do what shall be best for his company and for the traveling public, but it is evident from his letter to you, that he is not fully informed of the peculiar and complicated condition of affairs existing at Niagara Falls, or of the uses which the exclusive privileges granted by his company are made to serve.

No satisfactory adjustment of a grievance which seriously affects the traveling public, the State Reservation at Niagara, and the business interests of this community, can be hoped for, unless future investigations shall be conducted differently from the past.

I shall be glad to have you forward this letter to Assistant General Superintendent Voorhees.

Very respectfully.

THOS. V. WELCH,
Superintendent.

NIAGARA FALLS, N. Y., *September 18, 1889.*

HON. ANDREW H. GREEN, *President of Commission:*

DEAR SIR.—I enclose you a "Guide to Niagara Falls," just issued by the New York Central & Hudson River Railroad Company. You will see that it is so loosely worded as to be likely to give the traveling public the impression that admission fees are charged at Goat island and Prospect park. The fee at the inclined railway is stated at double the actual amount. In the reference to the carriage business, no mention is made of the Reservation carriage service, and the somewhat formidable list of "fees at Niagara Falls," placed before the stranger, is largely inaccurate.

FEES AT NIAGARA FALLS.

Goat island, including guide and suit to go through "Cave of the Winds".....	\$1 00
Prospect park—Down and up inclined railway (each way) ..	10
Prospect park—Round trip on "Maid of the Mist," including rubber suit	50
New bridge—Niagara Falls to Canada and return, each person (carriage, twenty-five cents).....	25
Museum—On Canada side near the Falls.....	50
Under Horseshoe Falls—Canada side, guide and suit.....	1 00
Burning spring.....	50
Old Suspension bridge—Over and return	25
Whirlpool Rapids and park—Inclined railway, Canada side ..	50
Whirlpool Rapids and park—Elevator, American side.....	50
Whirlpool, stairs—American side.....	50
Whirlpool—Inclined railway, Canada side.....	50

Niagara Falls to Suspension Bridge — Street car over old bridge in Whirlpool Rapids park (Canada side), return same way.....	\$0 55
If each is paid separately.....	85
Niagara Falls to Suspension Bridge — Street car, walk to Buttrey's, Whirlpool Rapids, elevator, return same way ...	40
If each is paid separately.....	60
Niagara Falls to Suspension Bridge — Street car, transfer from Suspension Bridge to Old Whirlpool (American side) and return	55
If paid separately.....	85
Carriage hire — Regular rate per hour.....	1 50
Carriage hire — To take in all places of interest for party of four (4) or more in a carriage, each person.....	1 00

It is strange that the New York Central management should enumerate so-called "points of interests," at some of which, very questionable business methods are adopted. If the publication of the list of "fees at Niagara Falls," is intended for the information and protection of the patrons of the road, the facts concerning the "points of interest" should be stated in full as follows:

Cave of the Winds (Goat island), including guide and suit to go through.....	\$1 00
Inclined railway — Prospect park, down and up (each way)	05
Maid of the Mist — (Steamer landing in Prospect park), round trip including rubber suit.....	50
New bridge — Niagara Falls to Canada and return,— each person (carriage twenty-five cents).....	25
Museum, American side — Near the falls, S. Davis, proprietor.....	50
Twenty-five cents commission on each person; Twenty-five per cent on all goods purchased, paid to carriage drivers.	
Hydraulic elevator, at Horseshoe falls, Canada side — Guide and suit.....	50
Without guide and suit.....	25
Burning spring, Canada side, P. Clark, proprietor.....	50
Twenty-five cents commission on each person; Twenty-five per cent on goods purchased, paid to carriage drivers.	

Old Suspension bridge — Over and return (no carriage toll).	\$0 10
Whirlpool Rapids and Park — Inclined railway, Canada side, James T. Brundage of C. W. Miller & Co., manager and treasurer.....	50
Twenty-five cents commission on each person; Twenty-five per cent on goods purchased, paid to all carriage drivers, excepting drivers employed by the manager.	
Whirlpool Rapids and Park — Elevator, American side (Smith's).....	50
Twenty-five cents commission on each person paid to carriage drivers.	
Whirlpool stairs, American side	50
James T. Brundage, of C. W. Miller & Co., lessee; twenty-five cents commission on each person; twenty-five per cent on goods purchased, paid to all carriage drivers excepting drivers employed by the lessee.	
Whirlpool — Inclined railway, Canada side, L. Colt, proprietor,	50
Twenty-five cents commission on each person; twenty-five per cent on goods purchased, paid to carriage drivers.	
Niagara Falls to Suspension bridge — Street cars, over old bridge, in Whirlpool Rapids park (J. T. Brundage, manager), Canada side, return same way.....	50
If each paid separately	70
Niagara Falls to Suspension bridge — Street cars, walk to Buttrey's, Whirlpool Rapids, elevator, return same way...	40
If each paid separately	60
Niagara Falls to Suspension bridge — Street car, transfer from Suspension bridge to Old Whirlpool (American side, James T. Brundage, lessee), and return	55
If each paid separately	85
Carriage hire — Regular rate per hour	1 50
Carriage hire — To take in all places of interest for party of four (4) or more in carriage, each person.....	1 00

The guide as a whole is so misleading and inaccurate that it should be withdrawn from circulation at once.

I hope you will kindly bring this communication to the attention of General Superintendent Toucey.

Very respectfully.

THOS. V. WELCH,

Superintendent.

NEW YORK CENTRAL AND HUDSON RIVER RAILROAD Co.,
 GENERAL SUPERINTENDENT'S OFFICE, GRAND CENTRAL STATION, }
 NEW YORK, October 4, 1889.

HON. THOS. V. WELCH, *Superintendent Niagara Falls Reservation, Niagara Falls, N. Y.:*

DEAR SIR.—Your communication to the Hon. Andrew H. Green, of September eighteenth, was forwarded to me to-day by Mr. Green.

The matter referred to in your letter was called to my attention by a marked article in a Buffalo paper some week or ten days ago, and the matter was immediately taken up by Mr. Daniels, our general passenger agent, and corrections made. I will, however, hand Mr. Daniels your suggestions, which, I think, are good, and convey information which we did not have.

Yours truly.

JOHN M. TOUCEY.

NIAGARA FALLS, N. Y., November 1, 1889.

MR. THEODORE VOORHEES, *Assistant General Superintendent New York Central and Hudson River Railroad, Grand Central Station, New York City:*

DEAR SIR.—The enclosed letter of October fifth has been handed to me by Mr. M. G. Lampkins, the proprietor of the Harvey House at this place.

In view of the assurance contained in your letter of September seventh, addressed to Hon. Andrew H. Green, president of the Board of Commissioners of the State Reservation at Niagara, that there is no soliciting whatever for carriages on your trains, I wrote to Mrs. Rogers, asking if the statement made by Mr. Lampkins was true, and I have received a reply from Mr. Rogers, which I enclose to you. I forward the papers for your consideration at the request of Mr. Lampkins.

Very truly yours.

THOS. V. WELCH,
Superintendent.

HARVEY HOUSE,
 NIAGARA FALLS, N. Y., October 5, 1889. }

T. V. WELCH, Esq., *Superintendent State Reservation* :

DEAR SIR.—I beg to call your attention to the fact that the train agent of the Miller & Brundage Coach Co. solicited a Mrs. Rogers and son to purchase a hack ticket on the train arriving here at 10 A. M. on the New York Central and Hudson River Railroad, this date.

He made arrangements as to price, service, etc., on the train but declined to deliver the ticket until reaching the depot.

Mrs. Rogers and son were recommended to my house by friends, and the agent spoke disparagingly of this house, endeavoring to induce them to go to the Spencer.

This is only one of many similar occurrences this season, two of which I have reported to Messrs. Miller & Brundage, but without redress.

Very respectfully yours.

M. G. LAMPKINS.

NEW YORK CENTRAL AND HUDSON RIVER RAILROAD CO.,
 GENERAL SUPERINTENDENT'S OFFICE, GRAND CENTRAL STATION. }
 NEW YORK, November 22, 1889.

HON. THOS. V. WELCH, *Superintendent Niagara Falls State Reservation,*
Niagara Falls, N. Y.:

DEAR SIR.—Your letter of November first to Mr. Voorhees received, complaining of the action of the agent of Miller & Brundage regarding Mrs. Rogers' connection with the Harvey House.

An investigation has been made of the case, and I find that Mrs. Rogers and son did engage a carriage from Miller & Brundage's agent on New York Central train No. 13, due at Niagara Falls at 9.55. When they were asked by the agent if they wanted a "bus," or wanted their baggage taken care of, they said no, but would want a carriage; and then asked what it would cost them to see the Falls and other points of interest, which information the agent truthfully gave. They wanted to engage a carriage there and then, but were told it was not allowed.

They then told the agent they wanted to go to the Harvey House, ordered a coach to take them there, and also to return for them at 1.30 to take them around to see the points of interest.

I find that an old hackman, by the name of John Moloney, tried to hire Mrs. Rogers his carriage, and when he was informed that they

had already engaged one, he evidently made a statement to Mr. Rogers which made him dissatisfied. Rogers went to Miller & Brundage, who told him if that was the case he would have to pay for the coach at the hotel, and that they would like to have him take their coach, and if upon his return he was not satisfied, the money would be refunded. When they returned they acknowledged to Mr. Brundage that he had saved them over two dollars.

I must think that there is a disposition on the part of some one at Niagara Falls to find fault with Miller & Brundage, whether it is just or not; and in every case I take up where complaints have been made, I have found that they have been square in their dealings. In connection with this, I will say that I have received a number of letters purporting to come from people stopping at the Hotel Kaltenbach. Mr. Kaltenbach seems unwilling to acknowledge anything as good originating from the railroad; but that everything is bad, because Miller & Brundage are there. I will frankly state that Miller & Brundage do not do anything to injure Mr. Kaltenbach's house, and I respectfully request that when you get any complaints whatever from Mr. Kaltenbach, or if he sends any one to you, you will go directly to Miller & Brundage and ferret the matter out, and you will find, without doubt, that the dealing was square and correct.

Sorry not to have seen you in New York when here. Shall be pleased to have you call at any time when you do come down.

Yours truly.

JOHN M. TOUCEY.

NIAGARA FALLS, November 23, 1889.

MR. JOHN M. TOUCEY, *General Superintendent N. Y. C. & H. R. R. R.,
Grand Central Station, New York:*

DEAR SIR.—I have just received your letter of yesterday, and I carefully note the contents. I forwarded the papers to which you refer to Mr. Voorhees, at the request of Mr. Lampkins of the Harvey House, because he complained of two things, which Mr. Voorhees in his letter of September seventh, addressed to the Hon. Andrew H. Green, president, gave assurance did not exist, to wit:

1. Soliciting for carriage passengers on trains.
2. Improperly interfering with passengers in the selection of hotels.

I believe you will agree with me that if these two things are permitted it is in the power of Miller & Brundage, by the first, to damage the hotel interest here generally by intercepting prospective guests,

and, by the second, to inflict serious injury upon any particular hotel keeper, by unjust discrimination against him in his business. I have no desire to interfere in the controversy between the hotel keepers and Miller & Brundage, and for the present I will not deny or affirm the evidently sincere conclusions which you arrive at in your letter, in view of a proposition which I am about to make to you. As superintendent it is my duty, as far as in my power, to protect visitors to the Reservation from imposition and to see to it that the Reservation itself does not suffer from misrepresentation.

Soon after the exclusive livery privileges were granted by the railroad companies I stated to the Commissioners of the Reservation and, by their direction, to the general passenger agent of your company, that I believed it was manifestly unjust and improper to grant such privileges to persons owning or controlling places in the neighborhood of the Falls, where they systematically conveyed their passengers and charged them admission fees, and where they had bazaars for the sale of merchandise to them and establishments for photographing them, and who had also arrangements with certain hotels for the payment of a percentage of the receipts from their livery. That was the contention I then made and it is the only ground I have ever taken in this matter. You will see by the letter of Mr. Monett of December 22, 1887, which I enclose, that he then admitted the justice of this objection, and promised to remove it by divesting the exclusive livery privilege of the abuses connected with it.

You will pardon me for saying that this has not yet been done, and that at this time Miller & Brundage, one or both of them, own or control places where they systematically take their passengers and charge them admission fees, also bazaars, where they sell them merchandise, a gallery where they photograph them, and they have arrangements with certain hotels, to which they pay a percentage of the receipts from their livery. These are really not matters for discussion. They are known to everybody here. I ask you candidly, is it not my duty, holding as I do a trust to which I hope to be faithful, to protest against an arrangement which intercepts before arrival, visitors to the State Reservation, which is *free* to all, takes them aside and conducts them through a number of cunningly devised money-making schemes?

c. This improper and unjust union existing between the exclusive livery privilege and these mercenary concerns is the chief cause of the trouble which exists here, and in my opinion the dissatisfaction among the hotel keepers and other business people will and, of right, should continue until the toll places, bazaars, photographing business, and

the hotel partnerships in livery matters, shall be resolutely cut off and permanently separated from the exercise of the exclusive livery privileges granted by the railroad companies. I am further of the opinion that if you desire to ascertain the facts it will be necessary for you to make a thorough investigation, personally, here at Niagara Falls, and in the presence of all the parties concerned, and I may add the sooner this is done the better.

Now, in order to get at the root of this disagreeable business, which is a constant source of annoyance to me, as it must be to you and to your associates, I make the following proposition :

If you will investigate the subject personally, here in the presence of all the parties concerned, I will place the Reservation office at your disposal and prove the following statements to be true:

First. That Miller & Brundage, one or both of them as the case may be, own or control: The Whirlpool, American side, admission fifty cents; the Whirlpool Rapids park, Canada side, admission fifty cents; the photograph gallery at Whirlpool Rapids park, Canada side; the bazaar at the Whirlpool, American side; the bazaar at the Whirlpool Rapids park, Canada side; to all of which places they systematically seek to, and in most cases do, convey their passengers; the bazaar of the Clifton House, Canada side; the bazaar of the Cataract House, American side.

Second. That they pay a certain percentage of the receipts from their livery to the following hotels: Cataract, International, Spencer House.

Third. That they pay commissions, one-half the admission fees, to carriage drivers bringing passengers to the Whirlpool and the Whirlpool Rapids park.

Fourth. That they pay commissions, twenty-five per cent, on amount of purchases, to carriage drivers bringing customers to their bazaars.

I also urge that the charges of soliciting for carriages upon the trains and of discriminating against certain hotels be investigated by you personally here upon the ground. If these things are proved to exist I am sure you will not sanction them for a moment, and that you will take such action as will remove all just cause for complaint in the future.

Accept my thanks for your kind invitation to call upon you when in the city. Please return Mr. Monett's letter to me and greatly oblige.

Very truly yours.

THOS. V. WELCH,

Superintendent.

NIAGARA FALLS, N. Y., *January 21, 1890.*

Mr. JOHN M. TOUCEY, *General Superintendent N. Y. C. and H. R. R. R.,
Grand Central Station, New York:*

DEAR SIR.—Referring to my letter of November twenty-third last to you, which I hoped you received in due time. Will you kindly return Mr. Monett's letter (attached) to me as requested, and greatly oblige?

Very truly yours.

THOS. V. WELCH,
Superintendent.

NEW YORK CENTRAL AND HUDSON RIVER RAILROAD CO.,
GENERAL SUPERINTENDENT'S OFFICE, GRAND CENTRAL STATION, }
NEW YORK, *January 25, 1890.*

HON. THOS. V. WELCH, *Superintendent State Reservation at Niagara Falls,
N. Y.:*

DEAR SIR.—Mr. Daniels and myself purpose going to Niagara Falls, shortly, and make the investigation which you invite us to make. I will bring all papers with me when I come.

Yours truly.

J. M. TOUCEY.

NIAGARA FALLS, N. Y., *January 29, 1890.*

Mr. JOHN M. TOUCEY, *General Superintendent N. Y. C. and H. R. R. R.,
Grand Central Station, New York:*

DEAR SIR.—I have your favor of the twenty-fifth inst. I am glad to know that yourself and Mr. Daniels are coming here to make an investigation. I hope it will be thorough and final. The time is opportune as you will see by the enclosed clipping from our local paper stating that Mr. Brundage has just added another toll-gate (with a bazaar and a photograph gallery attached) to his management.

Referring to the reported formation of a stock company by your lessees it will be interesting to ascertain if among the stockholders are persons here already interested with Miller & Brundage in toll places, stores and photograph galleries, and also whether the franchise granted by your company is to be an item in the capital stock of the proposed company.

Please advise me a few days in advance of your coming. I assume that you will so notify all other persons interested. Kindly file this letter with my communication of November twenty-third last, and oblige.

Very truly yours.

THOS. V. WELCH,
Superintendent.

NIAGARA FALLS, N. Y., *February 1, 1890.*

MR. JOHN M. TOUCEY, *General Superintendent N. Y. C. & H. R. R. R.,
Grand Central Station, New York :*

DEAR SIR.—I enclose to you a clipping from the *Niagara Courier* of to-day.

It is very important that Mr. Brundage should be present at the pending investigation, and I hope that on receipt of this you will arrange to have him present.

Very truly yours.

THOS. V. WELCH,
Superintendent.

NIAGARA FALLS, *February 8, 1890.*

MR. JOHN M. TOUCEY, *General Superintendent N. Y. C. & H. R. R. R.,
Grand Central Station, New York :*

DEAR SIR.—Referring to your letter of January twenty-fifth last, relating to the investigation of the relations of the lessees of the livery privileges, with toll-gates, stores, photograph galleries, etc.

Hon. Andrew H. Green, President of the Board of Commissioners, has requested representatives of the State to attend the investigation.

As they have other engagements they ask me to ascertain when the investigation is to take place, in order that they may arrange to be present.

Will you kindly let me know so that I may give them the desired information.

I hope you have made arrangements to have Mr. Brundage delay his departure for Florida until after the investigation.

An early reply will oblige.

Very truly yours.

THOS. V. WELCH,
Superintendent.

NEW YORK CENTRAL AND HUDSON RIVER RAILROAD CO.,
GENERAL SUPERINTENDENT'S OFFICE, GRAND CENTRAL STATION, }
NEW YORK, *February 10, 1890.*

HON. THOS. V. WELCH, *Superintendent State Reservation, Niagara Falls,
New York:*

DEAR SIR.—I have yours of February eighth.

I can not prevent Mr. Brundage going to Florida, if he is booked for that point. I do not think it necessary to detain him. We have been very particular of late in ascertaining in regard to the carriage and "bus" service which they perform at Niagara Falls, by sending people unknown to them to take carriages and be taken about the place and return. In every instance it has been extremely satisfactory, and I am frank to say that I think the carriage service at Niagara Falls, as now conducted, is better than it ever was before, and better than it is in any place I know of.

I do not care to have a political matter made of the investigation. I say this in consequence of your saying that representatives of the State will attend the investigation.

I prefer not to make the investigation if it takes that direction.

Yours truly.

JOHN M. TOUCEY.

NIAGARA FALLS, N. Y., *February 13, 1890.*

MR. JOHN M. TOUCEY, *General Superintendent N. Y. C. & H. R. R., Grand
Central Station, New York:*

DEAR SIR.—I have your letter of February tenth. An investigation without Mr. Brundage being present would not be in accordance with my proposal, accepted by you. I supposed a request from you would cause Mr. Brundage to delay his departure beyond the fifteenth inst. The sending of people here, as you say you have done, has no bearing whatever on the question at issue, to wit: The propriety and legality of the business relations existing between your lessees and the toll-gates, stores, photograph galleries, etc., below the Falls.

I have no desire to make the investigation a political matter, but I do desire to make it thorough, and after three years of correspondence with your company concerning the existing abuses, I hoped that you would also be desirous of making such an investigation.

I am anxious to maintain the most cordial relations with your company, in proof of which I now say that if yourself and Mr. Daniels

will come here promptly and make a thorough investigation in the presence of the parties interested, no representative of the State but myself will attend.

Permit me to add that the abuses alleged do exist, and that, in any case, they will be investigated and remedied. If you are willing to be the party to make the investigation and apply the remedy, I am ready to try the experiment.

Kindly advise me of your decision by return mail and greatly oblige,

Very truly yours.

THOS. V. WELCH,

Superintendent.

NEW YORK CENTRAL AND HUDSON RIVER RAILROAD CO.,
SUPERINTENDENT'S OFFICE, GRAND CENTRAL STATION, }
NEW YORK, *February 14, 1890.*

HON. THOS. V. WELCH, *Superintendent of State Reservation, Niagara Falls, N. Y.:*

DEAR SIR.—I have yours of February thirteenth. I was not aware that the intention was to have an investigation, into the private business of Miller & Brundage's photograph galleries, or anything outside of the carriage service of the village. That service, as I wrote you the other day, is perfectly satisfactory to us, and we have yet to receive the first complaint from our patrons, that it has not been satisfactory to them. As regards the stores, and photograph galleries, with which you claim they are connected, we cannot by any possibility legally compel them to abandon that traffic. If you have it in your power, to compel them to abandon it, that is an authority for you to exercise; the road can not do so.

Mr. Daniels and Mr. Voorhees, have both engagements that will prevent naming a day definitely, but some of us will endeavor to be there within the next two weeks. In the meantime I will ask Mr. Brundage to remain.

Yours truly.

JOHN M. TOUCEY.

NIAGARA FALLS, N. Y., February 17, 1890.

MR. JOHN M. TOUCEY, *General Superintendent N. Y. C. & H. R. R. R., Grand Central Station, New York:*

DEAR SIR.—I have your favor of the fourteenth instant. I understood from you, that *yourself* and Mr. Daniels were to make a *thorough* investigation, and that it was to include in particular,

the charges which I made in my letter of November twenty-third last.

The abuses complained of have been fraudulently tacked on to the franchise granted by your company, and if such abuses are proven to exist, the remedy is in your hands in the first instance.

That is the position heretofore taken by your company, in relation to the same charges, as shown in the following communications to me from Mr. Monett, who made the first contract with C. W. Miller:

October 19, 1887.

"The firm is notified that they must refute the charges, to your satisfaction, or to the satisfaction of the Commissioners of the State Reservation with the least possible delay, or the contract giving the firm exclusive omnibus and carriage privilege at the Niagara Falls station of this company will not be renewed."

October 25, 1887.

"It is not the purpose of the company to renew the arrangement giving C. W. Miller & Company the exclusive privileges, at the Niagara Falls station, unless they can satisfy all concerned, that the business can be conducted, in an entirely neutral spirit, and *without identification, of any character, with particular hotels, bazaars, or points of interest.* We were not aware, at the time the contract was made with Mr. Miller, that he was to associate with himself, in business, any person who was so identified."

March 10, 1888.

"The contract with C. W. Miller & Company, was renewed for the current year, subject to the restrictions suggested in our correspondence, with regard to the carriage and baggage privilege, at the Niagara Falls station."

Since the lamented death of Mr. Monett, the restrictions referred to, have been deliberately violated, and ignored by your lessees. It is plain, that if such restrictions are in the existing contract, it is *your* duty to see to it, that they be enforced.

I have repeatedly stated that I make no charges against the carriage service, but against the unjust purposes which it is made to serve, presumably without the knowledge of your company, which gives it that power. If abuses practiced by the livery company, under the cover of the franchise granted by you, are brought to your knowledge by the investigation, I take it for granted that you will remedy them. If you do not, of course I reserve the right to

then take further action, so that the object of the State in establishing the Reservation may not be defeated, and in order that the interests of the public may be protected.

Kindly advise me a day or two in advance of your coming, and greatly oblige,

Very truly yours.

THOS. V. WELCH,

Superintendent.

An investigation was made here February twentieth by Theodore Voorhees, general superintendent of the New York Central & Hudson River railroad.

There were present in support of the charges against Miller & Brundage, Messrs. Devereaux, of the Cataract House; Schoellkopf, of the International and Spencer House; Kaltenbach, of the Hotel Kaltenbach; Hubbs, of the Temperance House; Hon. W. P. Horne, of the Western Hotel, Suspension Bridge; Messrs. Charles Bierstadt and George Barker, photographers, Niagara Falls, and the superintendent of the Reservation.

The accompanying map, to which reference is had, was submitted to Mr. Voorhees by the superintendent of the Reservation.

1. Ticket office of the Miller & Brundage Coach Company (Limited), James T. Brundage, manager.

2. Whirlpool, American side, admission fifty cents. Half of admission fee paid to drivers not employed by Miller & Brundage, James T. Brundage, lessee.

Whirlpool store, American side, twenty-five per cent on goods purchased, paid to drivers not employed by Miller & Brundage, James T. Brundage, owner.

3. Buttrey's elevator, American side, admission fifty cents. Half of admission fee paid to drivers not employed by Miller & Brundage, James T. Brundage, manager.

Buttrey's elevator store, twenty-five per cent on goods purchased, paid to drivers not employed by Miller & Brundage, James T. Brundage, manager.

Buttrey's elevator photograph gallery, twenty-five per cent on goods purchased, paid to drivers not employed by Miller & Brundage, James T. Brundage, manager.

4. Whirlpool Rapids park, Canada side, admission fifty cents. Half of admission fee paid to drivers not employed by Miller & Brundage, James T. Brundage, manager.

Whirlpool Rapids park store, twenty-five per cent on goods purchased, paid to drivers not employed by Miller & Brundage, James T. Brundage, manager.

Whirlpool Rapids park photograph gallery, twenty-five per cent on goods purchased, paid to drivers not employed by Miller & Brundage, James T. Brundage, manager.

5. Clifton House store, twenty-five per cent on goods purchased, paid to drivers not employed by Miller & Brundage, James T. Brundage, manager.

6. Cataract House store, twenty-five per cent on goods purchased, paid to drivers not employed by Miller & Brundage, James T. Brundage, manager.

7. Liveries, Cataract House, International, Clifton House, Spencer House, Prospect House, Niagara House. A percentage of receipts paid proprietors by Miller & Brundage, James T. Brundage, manager.

Superintendent Voorhees admitted the truth of the statements made in the foregoing letter, dated November 23, 1889, upon which the investigation was based, and of the statements made upon the accompanying map. At the close of the investigation Superintendent Voorhees, stated that the matter would be considered in New York, and that he would communicate the result of the investigation to the superintendent of the Reservation.

Since the hearing before Mr. Voorhees, February twentieth, the following correspondence has taken place:

NEW YORK CENTRAL AND HUDSON RIVER RAILROAD,
GENERAL SUPERINTENDENT'S OFFICE, GRAND CENTRAL STATION,
NEW YORK, *March 6, 1890.* }

HON. THOS. V. WELCH, *Supt. State Reservation, Niagara Falls, N. Y.:*

DEAR SIR.—I have examined very carefully the statements made before Mr. Voorhees while at Niagara Falls last week, by various private citizens and by yourself in the capacity of superintendent of the Reservation. The request made in them is, that no soliciting of passengers in the depot and upon the depot grounds of this company, on the part of the agents of Miller & Co., be allowed.

The reasons given for this request are, that the passengers arriving at Niagara are induced to ride in the conveyances of Miller & Co., and hurry away from the Falls, instead of going to hotels and viewing the Falls leisurely; that such passengers are driven first to the Whirlpool and Whirlpool Rapids (which are a distance of two miles

from the Reservation), before they are taken to the Reservation; that while at these places they are importuned to purchase curiosities, etc., on sale, and their time wasted; and that in such curiosities, and in the place known as the Whirlpool, Mr. Brundage, one of the firm of Miller & Co., is very largely, if not exclusively, interested.

Assuming that all these are facts, in what way do they indicate that the traveling public would be better served by the abolition of the privileges of soliciting given Miller & Co., than by their being allowed to continue it? No such solicitation is allowed upon the trains. Agents of that firm pass through the trains prior to their arrival at Niagara, inquiring for passengers who desire to take omnibuses to hotels, have their baggage transferred, and receiving orders therefor. It must be assumed, therefore, that persons on the trains who in no way indicate a desire to go to a hotel, do not intend to go to one, but rather intend to remain a very brief time, and during that time hope to see Niagara by walking or driving about it.

It is not questioned that the idea that Niagara can be appreciated in a rapid ride about, is absurd. Days, of course, should be passed about it to worthily comprehend its grandeur and beauty. But the fact remains that such is not the popular idea, and until that idea has been removed by educational influences, not at present within our control, our movements must be regulated with the idea of protecting people who imagine they can comprehend or even see Niagara in a day.

If the present privileges were taken away from Miller & Co., it would result, as in the past it always has, in passengers thinking that they would walk, intending to do so, and passing out upon the public streets; being there pestered and annoyed by irresponsible hackmen, they finally conclude to ride, and are then deceived by unscrupulous and designing hackmen, who impose upon the unsophisticated and unwary, threaten and intimidate the ignorant, making it exceedingly unpleasant for a visitor to remain any length of time.

It was only because of these practices that this company were induced to grant the privileges complained of, to Miller & Co.

I have not yet heard that any such practices are resorted to by Miller & Co. If visitors are driven first to the Whirlpool they are afterwards driven to the Falls, and that is all that can be asked. I have yet to learn that any better method is pursued by outside hackmen. If visitors purchase curiosities anywhere, they do so of their own free will, and not by compulsion. If any imposition is attempted at the shops, in which Mr. Brundage is interested, Miller & Co. are responsible parties, and should be compelled to make reparation by

the proper authorities. Is any effort made by the village authorities to have this done when imposition is practiced elsewhere?

My own experience while at Niagara, confirmed by the reports of many gentlemen with whom I have talked, is that the village government at Niaraga Falls makes little or no effort to have the ordinances enforced; that from the time the visitors leave the depot until they reach the brink of the Falls, on or off the Reservation, they are solicited, annoyed, importuned, by the hack-drivers who impose upon them in the manner indicated.

Of what use then would it be to discontinue the privilege afforded Miller & Co., who are not guilty of these practices, while these things continue? Is it not the fact that the arrangement with Miller & Co. is the only barrier, the only restraint, the only safeguard imposed by any one against that howling mob of irresponsible hackmen who appear to own the village of Niagara Falls?

If reform is necessary, permit me to suggest that, as superintendent of the Reservation, you can very effectually utilize the energy which has characterized your efforts against Miller & Co., in removing first this crying evil. I hear there is a Business Men's Association at Niagara, and in it are most of the large property-holders of the village. If I may do so without seeming officious, I would suggest that such association, which, by the by, was not to my knowledge officially represented before Mr. Voorhees, coöperate with yourself in the abolition of these iniquitous proceedings. It would be entirely feasible, would it not, upon complaint being made to you that certain drivers systematically violate their licenses by disorderly conduct and solicitation, to exclude them from the Reservation?

Might not arrangements of the same character be easily made with the commissioners of the Canadian reservation, and with the owners of other places of interest; and in this way, even should the board of trustees issue licenses to such parties, would not their occupation be gone?

This is a great and crying evil at Niagara Falls.

It is a "stench in the nostrils" of every visitor to the Falls, and he is happy when he gets away. It is one which the good citizens and the hotel proprietors should insist upon suppressing, or they will find that the public will not visit Niagara as they have done in the past. It is one which you as superintendent, can do much to prevent. I have yet to learn that any effort has been made in that direction by you or by the Business Men's Association, or any one else.

I am informed that it is against the village ordinances that solicitation be allowed in any public place inside the village limits. There

is no reason why this rule would not be observed at Niagara as it is in Saratoga, Richfield Springs and other public resorts. But while the leading business men, the leading hotels, and the superintendent of the Reservation permit the wholesale annoyance of visitors to continue in the hotels, streets and on the Reservation, they cannot expect that this company will aid the irresponsible hackmen of Niagara Falls in fleecing the public by allowing unsophisticated travelers to walk out into the public streets and there fall into the hands of irresponsible and notoriously dishonest persons, when better facilities can be afforded to the public in their depot for less money by responsible parties, whose errors, if any, can be promptly corrected.

For the present, the privilege of soliciting in the depot will be accorded Miller & Co., as we believe that their system of carriage service is the best that has been in use at Niagara Falls for many years. When we can be assured by citizens that an effort will be made to prohibit the importuning and soliciting in the streets, on the Reservation, and in the hotels, this company will join hands with said citizens in bringing about the long and greatly desired reformation, and make Niagara Falls what it really ought to be — a desirable place to visit and remain until all of its varied beauties can be seen.

Hoping that the dawn of this day is not far distant, I am

Yours very truly.

JOHN M. TOUCEY,

General Manager.

NIAGARA FALLS, N. Y., *March 10, 1890.*

Mr. JOHN M. TOUCEY, *General Manager New York Central and Hudson River Railroad, Grand Central Station, New York:*

DEAR SIR.—I have your letter of March sixth, in which you say: "I have carefully examined the statements made before Mr. Voorhees while at Niagara Falls last week by various private citizens and yourself in the capacity of superintendent of the Reservation. The request made in them is that no soliciting of passengers in the depot and upon the depot grounds of this company on the part of the agents of Miller & Co. be allowed."

I have no opportunity to examine the statements submitted to you. As you were not present at the hearing you can have no absolute knowledge of the statements made before Mr. Voorhees. The request made by the superintendent of the Reservation certainly is not correctly stated by you above. As you know, the statements made by me

as superintendent were that your lessees owned or controlled three toll-gates, two photograph galleries and five stores and the request made by the superintendent was that the livery privileges granted by you be separated from ownership and identification with such toll-gates, stores and photograph galleries, or that the livery privileges be revoked. One or the other of these things your company repeatedly promised to do.

At the hearing before Mr. Voorhees, February twentieth, the statements made by the superintendent were proven to be true. Your lessees made no defense or denial. The truth of the statements was publicly admitted by Mr. Voorhees and therefore your company is now face to face with the alternative of keeping the promise it made, or breaking it.

That is the situation so far as your company and the superintendent of the Reservation are concerned, and until there shall be evidence of the good faith of your company in the settlement of the question in hand, I must decline to discuss other matters mentioned by you.

I will briefly review our recent discussion of this question.

November twenty-third last, in reply to your letter of the day previous, I wrote to you, making certain statements, and proposing that you should investigate them personally, here, in the presence of all of the parties concerned. You did not acknowledge the receipt of that letter.

January twenty-first, I wrote, referring to it, asking you at the same time to return a letter from Mr. Monett to me.

January twenty-five, you replied, "Mr. Daniels and myself purpose going to Niagara Falls shortly and make the investigation which you invite us to make."

February tenth, you wrote, in substance, declining to ask one of your lessees to be present at the investigation.

February fourteen, you wrote, intimating that the particular statements made by me would not be investigated.

A hearing took place February twentieth; yourself and Mr. Daniels failed to appear. Mr. Voorhees at first endeavored to have a private investigation, and to exclude parties interested. When I refused to be a party to any investigation, excepting the kind agreed upon, Mr. Voorhees granted a full and courteous hearing to all the parties, and publicly admitted the truth of the statements made in my letter of November twenty-third, upon which letter the investigation was based. At the close of the hearing Mr. Voorhees stated that the matter would be considered in New York and that he would communicate with me concerning it. Now, *you*, who did not make the

investigation, send a communication such as is known in law as a "confession and avoidance," which evades the decision of the main question at issue, the responsibility of your company for the connection existing between your lessees and the toll-gates, stores and photograph galleries, but is devoted to many other matters, and Mr. Voorhees, who did make the investigation here, is silent.

Mr. Toucey, in closing, I wish to say that I have been of the opinion that if this question could be lifted above local influence and the facts brought to your full knowledge, the abuses complained of would be promptly remedied. It was for that reason that I invited you to make a personal investigation here upon the ground. I believed your sense of justice would prompt you to refuse to have your company any longer responsible for a systematic imposition upon the traveling public, or to be instrumental in injuring or crushing the business of many private citizens here.

As you have not yet made that personal investigation as promised, it may be well to suspend judgment and for the time being to give you the full benefit of the doubt.

The agreement between us was that yourself, your lessees, the other complainants here and myself should at last be brought face to face for an understanding and settlement of this complicated and disagreeable matter.

I was present and fulfilled my part of that agreement. You were absent and did not perform your part. I hope, therefore, you do not expect me to accept as final your judgment upon an investigation which you did not attend, which investigation (by reason of your absence from it) you are neither qualified to discuss nor to decide.

Kindly ask Mr. Voorhees to return Mr. Monett's letter to me, as promised, and greatly oblige.

Very truly yours.

THOS. V. WELCH,

Superintendent.

Much of the disorder at the railroad depot and in the village streets, which General Manager Toucey urges as an excuse for the action of the railroad company, does exist, and the superintendent, soon after the establishment of the Reservation, called attention to it in an address, at a public meeting called by him for that purpose, February 11, 1886, a copy of which address was forwarded to the railroad company. The superintendent has frequently mentioned the matter in his reports to the Commissioners, and has, on several occasions, requested the village trustees to enforce certain of the village ordinances. Carriage stands have been established by the

superintendent at the entrances to the Reservation, under the immediate supervision of the reservation police, in order to relieve the railroad depots and the hotels. Improper persons have been licensed by the village trustees. When they have been found offending upon the Reservation, they have been excluded by the superintendent — five in 1885, two in 1886, four in 1887, six in 1888, and two in 1889 — and the fact of such exclusion reported to the Commissioners.

One hundred and thirty-six carriage drivers have also been reported by the superintendent, to the trustees of the village, for not complying with certain of the village ordinances. At present, the difficulty of maintaining order at the railroad depots, and in the village streets, is aggravated by the action of the railroad companies in establishing, aiding and defending a monopoly, apparently exceeding their powers as common carriers, by renting the exclusive privilege of soliciting passengers on their trains, in their depots and in their depot grounds, at their Niagara Falls stations, to a livery company which also owns, operates or controls three toll places, two photograph galleries and five stores, to which they systematically convey their passengers, often without direction and before taking them to the Falls, thus largely defeating the object of the State, in establishing the Reservation and granting, for a money consideration, to one firm, a practical monopoly of the business of catering to the visitors to Niagara Falls.

In accordance with the instructions of the Commissioners, to report such action as may be necessary, to prevent further imposition upon the public, I respectfully recommend:

That the statements made by the superintendent that the New York Central and Hudson River Railroad Company, and the New York, Lake Erie and Western Railroad Company, have rented the exclusive privilege of soliciting passengers on their trains, in their depots and in their depot grounds, at their Niagara Falls stations, to a company which owns, operates or controls, or the stockholders of which own, operate or control three toll places, two photograph galleries and five stores, to which places they systematically convey their passengers, often without direction and before taking them to see the Falls, thus in a large measure defeating the object of the State, in establishing the Reservation, be submitted to the Board of Railroad Commissioners of the State, and that they be requested to investigate such complaint, and cause any abuses that may be found to exist to be corrected, in order that the public interest may be subserved.

Yours respectfully.

THOS. V. WELCH,

Superintendent.

NIAGARA FALLS, *March 14, 1890.*

STATEMENT OF EXCURSIONS, 1889-90.

*Number of excursion trains and places of departure, from October 13, 1889,
to September 30, 1890.*

Date.	WHERE FROM.	Number of cars.	Estimated number of visitors.
1889.			
Oct. 13	Washington, D. C., "Knight Templars."	6	360
13	Buffalo, N. Y.	3	180
13	International American Congress ...	6	360
16	Knight Templar Convention.....	20	1,200
16	Boston, Mass., "Raymond party"	7	420
16	Via R. W. and O. Ry., Harvest exc ...	6	360
22	Via West Shore railway way stations..	4	240
		52	3,120
1890.			
April 24	Buffalo, N. Y., "Royal Arcanum" Com.	4	240
24	California, "Raymond party".....	4	240
		8	480
May 2	Lockport, N. Y., Union Sch., "Arbor Day"	9	540
16	Boston, Mass., "Raymond party"	5	300
16	Syracuse, N. Y., "Railway cond."	4	240
18	Lockport, N. Y., via Erie Ry.....	3	180
20	Chicago, Ill. (en route to), Baptist Univ.	5	300
24	Toronto, Ont., Queen's Birthday.....	10	600
30	Lockport, N. Y., via Erie Ry. (Deco. Day)	4	240
30	Buffalo, N. Y., via N. Y. C. (Deco. Day).	6	360
30	Rochester, N. Y., via N. Y. C (Deco. Day)	5	300
		51	3,060
June 1	Batavia, N. Y., via Erie railway.....	4	240
3	Buffalo, N. Y., Graduating class.....	1	60
10	Buf'lo, N. Y., Supt. of Ins. Asyl. of the State	2	120
11	"Sons of St. George," reunion	10	600
11	St. Louis, Mo. (en route to), Christian Endeavor Association	3	180
12	Warren, Pa., Good Templars.....	4	240
15	Bradford, Pa.....	4	240
15	Bellefontaine, Pa.....	4	240
15	Rochester, N. Y.....	7	420
18	Railway Telegraph Sup't's conv	2	120
18	Annual reunion, Battery "M".....	2	120
18	Bradford and Emporium, Pa.....	5	300
18	Anc't Order of Foresters, via M. C. R'y.	7	420
18	Medical Eclectic Ass'n conv.....	2	120
18	Port Rowan, Ont.....	11	660

EXCURSIONS — (*Continued*).

Date.		WHERE FROM.	Number of cars.	Estimated number of visitors.
1890.				
June	18	Toronto, Ont.	3	180
	19	Toronto, Ont., Dr. Wild's church	2	120
	19	Toronto, Ont., Church of the Redeemer.	2	120
	24	Toronto, Ont., Emerald Beneficiary ..	4	240
	24	Castile, N. Y., Union school	2	120
	25	Newark, N. J., Park Reformed church.	4	240
	26	Toronto, Ont., Ch. of the Ascension...	3	180
	26	Jamestown, N. Y., delegates to Southern Synod	6	360
	26	Boston, Mass., "Raymond party"	6	360
	26	Philadelphia, Pa., special party.....	5	300
	27	Toronto, Ont., Presbyterian church...	4	240
	27	Chicago, Ill., sketching party	2	120
	28	Bradford and Ridgeway, Pa., via Erie Ry	14	840
	28	Toronto, Ont., Heintzeman Piano Mfg. Company	6	360
	29	Lockport, N. Y., via Erie railway.....	2	120
	29	Rochester, N. Y., via Erie railway	4	240
			137	8,220
July	1	Buffalo, N. Y., Grace M. E. Church Soc'y	8	480
	1	Toronto and Hamilton, Ont.	10	600
	1	Buffalo, N. Y., Grace M. E. Church Soc'y	3	180
	3	Toronto, Ont.	3	180
	4	Buffalo, N. Y., via N. Y. C. railway....	17	1,020
	4	Buffalo, N. Y., via Erie railway	9	540
	4	Buffalo, N. Y., via West Shore railway.	10	600
	4	Rochester, N. Y., via West Shore railway	11	660
	4	Buffalo, N. Y., two special trains via New York Central	20	1,200
	4	Brooklyn, N. Y., Talmage's Ch. Society.	8	480
	4	N. Y. city "Schwoebischer Sangerbund"	6	360
	4	New York city Weinacht party	7	420
	4	Buffalo, N. Y., via Erie railway	5	300
	4	Lockport and Jamestown Erie railway.	7	420
	5	Boston, Mass., School Teachers' Excur.	6	360
	5	Buffalo, N. Y., via Erie railway	3	180
	6	Buffalo, N. Y., via Erie railway	4	240
	6	Rochester, N. Y., via Erie railway	11	660
	6	Lockport, N. Y., via Erie railway	2	120
	7	Toronto, Ont., Jarvis st. Church Soc'y.	6	360
	7	"Knights of Pythias" excursion	8	480
	8	Auburn, N. Y., M. E. Church Society ..	7	420
	10	Toronto, Ont.	2	120

EXCURSIONS — (Continued).

Date.	WHERE FROM.	Number of cars.	Estimated number of visitors.
July 10	Jamestown, N. Y., Equit. Aid Union ..	6	360
10	Erie, Pa., "G. A. R."	7	420
10	Cleveland and Conneaut, O., via Nickel Plate railway	8	480
10	Newton Brook, Ont.	5	300
11	Cleveland, O., via Erie railway	15	900
11	Youngstown, O.	8	480
12	Batavia, N. Y., via N. Y. C. (old road)...	14	840
12	Buffalo, N. Y., German Y. M. C. A.	8	480
13	Pittsburgh, Pa.	5	300
13	Rochester, N. Y., via West Shore Ry...	5	300
13	Lockport, N. Y., via Erie railway	6	360
13	Bradford, Pa., via Erie railway	8	480
13	Dunkirk, N. Y., via Erie railway	4	240
13	Buffalo, N. Y., via Erie railway	3	180
15	Toronto, Ont., West. Presb. Ch. Soc'y .	9	540
15	Philadelphia, Pa., spl. party	5	300
15	Rochester, N. Y., via N. Y. C. Ry.	9	540
15	Bath & Perkinsville, Cath. Ch. Soc'y .	8	480
17	Buffalo, N. Y., Krettnr St. Ch. Soc'y .	8	480
17	Titusville, Cory, Oil City & Franklinville.	9	540
18	Auburn and Skaneateles, N. Y., via N. Y. C. railway (old road)	7	420
18	Philadelphia, Pa., via N. Cent. Ry.	4	240
18	Toronto, Ont., Kildar's Paper Mfg. Co., employés	3	180
18	Toronto, Ont., All Saints' Ch. Soc'y ...	6	360
19	Hamilton, Ont., Gd. Trunk Ry. emp. ..	36	2,160
19	Toronto, Ont., Bolt Works, employés..	7	420
19	Jamestown, N. Y.	3	180
19	Rochester, N. Y., via West Shore Ry...	5	300
19	Boston, Mass., "Raymond party"	3	180
19	Fall Brook, N. J.	4	240
20	Paterson and Newark, N. J., via Erie Ry.	11	660
20	Buffalo, N. Y., via Erie railway	24	1,440
20	Rochester, N. Y., via Erie railway	9	540
20	Valparaiso and Ft. Wayne, Ind., Toledo and Cleveland, O.	14	840
20	Chicago, Ill., "Switzer Sangerverein," via C. C. C. & I.	18	1,080
20	Rutland, Vt., bicycle club	1	60
21	Toronto, Ont., Euclid Av. M. E. Ch. Soc'y	5	300
21	Grand Trunk railway employés, "Federation of Labor"	24	1,440
21	Toronto, Ont.	15	900
23	Elmira, N. Y., Baptist Church Society.	8	480

EXCURSIONS — (Continued).

Date.	WHERE FROM.	Number of cars.	Estimated number of visitors.
1890.			
July	23 Toronto, Ont., Zion Church Society...	4	240
	24 Erie, Pa., M. E. Church Society	5	300
	24 Lockport, N. Y., Universalist Ch. Soc'y.	4	240
	24 Scranton, Pa.	4	240
	24 Dundas, Ont., Baptist & Meth. Ch. Un.	7	420
	25 Toronto, Ont., Bleuven St. Bap. Ch. Soc.	5	300
	25 Lockport, N. Y., Presbyterian Ch. Soc.	8	480
	25 Philadelphia, Pa., special party.	5	300
	25 Chautauqua, N. Y., Newton excursion.	8	480
	25 Pittsburg, Pa., special party	7	420
	26 Toronto, Ont., Christy Brown, biscuit employés	9	540
	26 Erie, Pa., "K'ts of the Golden Eagle."	8	480
	26 Woodstock, Ont., Hays Mfg. Co. emp's.	11	660
	26 Hamilton, Ont., Sanford, clothier, emp's	12	720
	26 Pittsburg, Pa., via Buffalo & Roch. Ry.	10	600
	26 Bradford, Pa., via Buffalo N. Y. and Phila. railway	21	1,260
	27 Woodstock, Ont., chair fac. employés..	11	660
	27 Buffalo, N. Y., via Erie railway.	5	300
	27 Lockport, N. Y., via Erie railway.	2	120
	27 Via Buffalo, Roch. and Pitts. railway..	13	780
	27 Rochester, N. Y., via West Shore ry...	6	360
	27 Philadelphia, Pa., Sang Mannerchor ..	2	120
	29 Toronto, Ont., Cook's Ch. Society. . .	2	120
	30 Toronto, Ont., St. Mathias Ch. Society.	8	480
	30 England, English Bible church.	4	240
	30 Warren, Pa., Newton, exc.	9	540
	30 Western N. Y. and Pa. railway.	16	960
	30 Bloomington and DeWitt, Ill., and Pontiac, Mich	10	600
	31 Tonawanda, N. Y., union of S. S.	17	1,020
	31 Toronto, Ont.	4	240
	31 Prohibition convention.	1	60
	31 Buffalo, N. Y., electric light exc., N. Y. Cent. railway ...	6	360
		774	46,440
Aug.	1 Western exc., via Erie, C. H. and D., and C. C. C. and I. railway.	90	5,400
	1 Lockport, N. Y., Congregational and Methodist Church Society	10	600
	1 Toronto, Ont., "Foresters," Odd Fellows and A. O. U. W. Society.	8	480

EXCURSIONS — (Continued).

Date.	WHERE FROM.	Number of cars.	Estimated number of visitors.
1890.			
August 1	Wash. and Balto., via North. Cent. Ry.	10	600
1	Cincinnati, O.	15	900
1	Gallion, O.	11	660
1	Akron and Mansfield, O.	6	360
1	Columbus, O.	10	600
1	North Judson and Fort Wayne, Ind. . .	10	600
1	Meadville, Pa.	8	480
1	Nashville, Tenn.	6	360
1	Louisville, Ky.	15	900
1	Toronto, Ont.	3	180
2	East Aurora, N. Y.	10	600
2	Toronto, Ont., A. Bell's band.	7	420
2	Rome, Watertown and Ogdensburg Ry.	12	720
2	Barre, Port Dover and Simcoe, Ont., via Grand Trunk railway.	11	660
2	Buffalo, N. Y., via Erie railway.	5	300
2	Philadelphia, Pa.	7	420
2	Glencoe & St. Tho's., Ont., via Gr. Tr. Ry.	14	840
2	Hamilton, Ont.	7	420
3	Via West Shore Ry., G. A. R. excur'n..	7	420
3	Chicago, Ill., I. O. of O. F. (en route to)	8	480
3	Rochester, N. Y., via West Shore Ry..	6	360
3	Lockport, N. Y., via Erie railway.	4	240
3	Philadelphia, Pa., I. O. of O. F.	2	120
3	Buffalo, N. Y., via Erie railway.	7	420
3	Lockport, N. Y., via Erie railway. . . .	3	180
4	Paris, Ont., via Grand Trunk railway..	4	240
5	Chautauqua, N. Y., Newton excur'n..	8	480
5	Grand Trunk Railway employés.	16	960
5	M'dville, Pa., James'n., N. Y., via Erie Ry	18	1,080
6	Buffalo, N. Y., Reformed Zion Ch. Soc.	10	600
6	Toronto, Ont., St. Matthew's Ch. Soc..	9	540
6	Pittsburg, Pa., and Oil City, Pa.	15	900
7	Cleveland, Lima, Fremont, Ohio, via Nickel Plate Ry.	30	1,800
7	Toronto, Ont., Queen's Chapel Society.	9	540
7	Oswego, N. Y., via R. W. and O. Ry. . .	20	1,200
7	Guelph, Ont., A. O. U. W., Select Knights.	18	1,080
7	Jamestown, N. Y., Swedish Mission Society.	12	720
7	White Mountain, N. H., exc.	8	480
7	Philadelphia, Pa., spl. party.	8	480
7	Lafayette, Ind.	11	660
7	Michigan City, Ind.	10	600

EXCURSIONS—(Continued).

Date.	WHERE FROM.	Number of cars.	Estimated number of visitors.
1890.			
August 8	Buffalo, N. Y., electric light exc	5	300
8	Toronto, Ont., Bathurst Baptist Church Society	6	360
8	Pittsburg, Pa.	10	600
8	Salamanca, N. Y., Congregational Ch.	9	540
8	Boston, Mass., G. A. R. delegates from States of Cal., Ore., Wash., Minn., Iowa, Ills., Idaho, 12 sec. 9	108	6,480
8	Chautauqua, N. Y.	4	240
8	Clifton, Ont.	4	240
9	Philadelphia, Pa., spl. party	9	540
9	Via R. W. and O. Ry.	10	600
9	Erie, Pa., iron and boiler works empl.	16	960
9	Toronto, Ont.	7	420
9	Boston, Mass., (en route to) G. A. R. delegates	45	2,700
9	Toronto, Ont., machinists	7	420
10	Boston, Mass. (en route to), G. A. R. delegates	91	5,460
10	Via Grand Trunk Railway	7	420
10	Holton, Kansas, G. A. R., en route to Boston	5	300
10	Via Grand Trunk Railway	7	420
11	Toronto, Ont., civic holiday	8	480
11	Hamilton, Ont., civic holiday	5	300
12	Middleport, N. Y., via N. Y. C. Ry.	6	360
12	Rochester, N. Y., via N. Y. C. Ry.	7	420
12	Toronto, Ont., Woodgreen St. Y. M. C. Ass'n	8	480
12	Chautauqua, N. Y.	12	720
12	Lindsay, Ont., C. M. B. A.	6	360
13	Toronto, Ont., Father McCann's R. C. church	4	240
13	Lockport, N. Y., Supts. of the Poor, State N. Y.	2	120
14	Peterboro, Lindsay and Toronto, "C. H. Wood Foresters,"	10	600
14	Toronto, Ont., St. Stephen's church	5	300
14	Philadelphia, Pa., spl. party	6	360
15	Galt, Ont., "Good Templars,"	8	480
15	Chautauqua, N. Y.	7	420
15	Lockport, N. Y., electric light exc.	5	300
15	Eglinton, Ont., S. S. and Ch. Soc'y	8	480
16	Toronto, Ont., Episcopal church	4	240
16	Rochester, N. Y., farmer's excursion	8	480

EXCURSIONS—(Continued).

Date.	WHERE FROM.	Number of cars.	Estimated number of visitors.
1890.			
August 16	St. George, Ont., Mechanical Inst	11	660
16	Coburgh, Ont., car works employés ...	9	540
16	Lancaster, Pa.	9	540
16	Boston, Mass., G. A. R. returning....	8	480
16	Newport, Ky., G. A. R. returning.....	2	120
16	London, Ont., via Gr. Trunk Ry.....	3	180
17	Lockport, N. Y., via Erie railway.....	5	300
17	Rochester, N. Y., via Erie railway	7	420
17	Buffalo, N. Y., via Erie railway.....	4	240
17	Newark, N. J., via Erie railway.....	10	600
17	Boston, Mass., G. A. R. (en route home)	15	900
18	Buffalo, N. Y., "Turnverein" conv....	5	300
18	Toronto, Ont., Orangemen (Q. C. lodge)	7	420
18	Toronto, Ont., civic holiday excursion.	10	600
18	"G. A. R." from Boston, returning ...	10	600
18	Toronto, Ont., I. O. of O. F. society...	12	720
18	St. Catherines I. O. of O. F. society...	5	300
18	Philadelphia, Pa., special party.....	11	660
19	New York city, Mystic Shrine lodge ..	8	480
19	Via Nickel Plate, Wabash, Ham. & Day. and Central railways	52	3,120
19	Philadelphia, Pa., special party.....	14	840
19	Chautauqua, N. Y.	11	660
19	Pittsburgh, Pa.	8	480
19	Boston, Mass., G. A. R. returning home.	10	600
19	Buffalo, N. Y., via Erie railway.....	4	240
19	St. Thomas, Ont., via M. C. Ry	14	840
20	Scranton, Pa., Hotelmen's Union	3	180
20	Pittsburgh, Pa.	10	600
20	Traveling pass agents' convention....	2	120
20	Ohio, Indiana and Illinois	45	2,700
20	Nickel Plate railway excursion.....	20	1,200
21	Bath, Corning and Dansville, N. Y., Union Masonic.....	17	1,020
21	Buffalo, N. Y., St. Vincent's Orph. Asy.	1	60
21	Franklin, Pa., I. O. of O. F.	12	720
21	Grimsby, Ont., civic holiday	6	360
21	Buffalo, N. Y., Deaf-Mute convention.	3	180
21	Boston, Mass., G. A. R. returning home	12	720
21	Auburn, N. Y.....	6	360
21	Belmont, N. Y., via Erie railway.....	9	540
21	Wellsville, N. Y.	8	480
21	Oil City, Pa., I. O. of O. F.	10	600
21	Buffalo, N. Y., Sisters of Charity orph.	2	120

EXCURSIONS — (*Continued*).

Date.	WHERE FROM.	Number of cars.	Estimated number of visitors.
1890.			
August 21	Burlington, Ont., Free Masons, via Grand Trunk railway.....	6	360
22	Lockport, Batavia, Medina, reunion Eighth New York artillery	8	480
22	Cin., Louis., Cairo, Covington, Dayton, Franklin, Xenia, Zanesville, etc	73	4,380
22	Philadelphia, Pa., special party	12	720
22	Baltimore, Md., and Washington, D. C.	14	840
22	Terre Haute, Ind.	10	600
22	Leroy, Batavia, Corfu, G. A. R. posts..	12	720
23	Beaver Falls, Pa.	10	600
23	Rochester, N. Y., "Roch. Liederkrantz"	2	120
23	London and Hamilton, Ont., via Ham- ilton and Northwestern railway	12	720
24	New York city, Exempt firemen	2	120
24	Bradford, Pa., via Rochester, Buffalo and Pittsburg railway	12	720
24	Tobey Mine, Pa.	10	600
24	Niles, Hubbard and Youngstown, Mich.	10	600
24	Buffalo, N. Y.	12	720
24	Dugas Mine, Pa.	10	600
23	Stratford, Ont., via Grand Trunk Ry..	18	1,080
23	Buffalo, N. Y., via Erie railway	6	360
24	Buffalo, N. Y., via Erie railway	6	360
24	Lockport, N. Y., via Erie railway	3	180
24	Elmira, N. Y., via Erie railway	12	720
25	Boston, Mass., G. A. R. return'g home,	10	600
25	Corry, Pa., Ajax Boiler and Mach. Wks.	10	600
26	Lockport, N. Y., Luth. and Cong. ch.	12	720
26	Woodstock, Ont., Amat'r Athletic club,	11	660
27	Hamilton, Ont., Knights of Maccabees,	12	720
27	Philadelphia, Pa., special party	9	540
27	Tor'to, Streets'le and Stony Cr'k, Ont.,	14	840
27	P'tage & Ho'dale, via W. N. Y. & P. Ry.	10	600
27	Columbus, Cincinnati and Dayton, O..	24	1,440
28	Lackport, N. Y., Luth. ch., via Erie Ry.	10	600
28	Buffalo, N. Y., Prospect Ave. Bap. ch.,	10	600
28	Buffalo, N. Y., via Erie	4	240
28	Toronto, Ont.	8	480
28	Oswego, N. Y., Knights of the Cross .	10	600
28	Batavia, N. Y., via N. Y. C. railway...	9	540
28	Caledonia, N. Y.	7	420
29	Zanesville, Marietta and Kent, Ohio..	13	780
29	Cleveland, Ohio	10	600
29	Toronto, Ont., St. Barnabas church ...	6	360

EXCURSIONS — (*Continued*).

Date.	WHERE FROM.	Number of cars.	Estimated number of visitors.
1890.			
Aug. 29	Bicycle tournament	75	4,500
29	Chattanooga, Tenn.	9	540
31	Jefferson	10	600
31	Port Jervis, Elmira, etc.	13	780
31	Rochester, N. Y., via West Shore Ry. .	10	600
31	Carbondale and Scranton, Pa., via D., L. & W. railway	15	900
31	Lockport, N. Y., via Erie railway	5	300
31	Buffalo, N. Y., via N. Y. C. railway....	12	720
31	Buffalo, N. Y., via Erie railway.....	4	240
		2,029	121,740
Sept. 3	Chicago, Ill., Western Association Underwriters	4	240
3	Erie, Pa., Clark's Business College...	7	420
3	Rochester, N. Y., via West Shore Ry. .	8	480
3	Attica, Warsaw and Addison, N. Y., via Erie Ry.	10	600
3	Binghamton, N. Y., via Erie railway ..	10	600
4	Titusville, Pa.	6	360
5	Boston, Mass., Raymond party	3	180
6	Syracuse, N. Y., via N. Y. C. excursion.	6	360
9	Pavilion & Farmers'v'e, Pa., via Erie Ry.	9	540
9	Toronto, Ont.	2	120
10	Cleveland, O.	10	600
11	Cleveland and Warsaw	15	900
12	Bath, N. Y., from Soldiers' Home.	10	600
12	Farmer's excursion, via R. W. & O. Ry.	7	420
13	Am. Ass'n Roadmasters (railroad)	8	480
14	Jersey City and Paterson, N. J., via Erie railway.....	9	540
14	Rochester, N. Y.	7	420
15	Warren, Pa., and Jamestown, N. Y., via Erie railway.....	12	720
15	Meadville, Pa., via Erie railway	10	600
16	Buffalo, N. Y., Epis'l Diocesan conv. .	2	120
17	Cleveland, O., via Erie railway	12	720
17	Hornellsville and Buffalo, N. Y., Switch- men's Union conv.	5	300
17	Toronto, Ont.	3	180
18	Reunion Twenty-third Battery	6	360
18	Boston, Mass., bankers and brokers... .	3	180
18	Cincinnati, O., spl. party.	12	720
18	Scranton and Carbondale, Pa., via Erie railway	13	780

68 REPORT OF COMMISSIONERS OF STATE RESERVATION AT NIAGARA.

EXCURSIONS — (Continued).

Date.	WHERE FROM.	Number of cars.	Estimated number of visitors.
1890.			
Sept. 18	Erie, Pa., en route to Toronto fair	5	300
19	Boston, Mass., wholesale grocers	4	240
19	Boston, Mass., Raymond party	6	360
21	Valparaiso, Ind., and Cleveland, O., via Nickel Plate.....	11	660
21	Lockport, N. Y., via Erie railway	3	180
21	Buffalo, N. Y., via Erie railway.....	3	180
23	Corning and Attica, N. Y., via Erie Ry.	6	360
27	Portland, Me.	10	600
27	Pittsburg and New Castle, Pa.	6	360
28	Corning, N. Y., via Erie railway	4	240
28	Rochester, N. Y., via Erie railway	6	360
30	Albany, N. Y.	12	720
		285	17,100

EXCURSIONS — (Concluded) — RECAPITULATION.

Year.	MONTH.	Number of cars.	Estimated number of visitors.
1889	October	52	3,120
1890	April	8	480
1890	May	51	3,060
1890	June	137	8,220
1890	July	774	46,440
1890	August	2,029	121,740
1890	September	285	17,100
	Totals	3,336	200,160

REPORT OF THE TREASURER

FOR THE

FISCAL YEAR COMMENCING OCTOBER 1, 1889, AND
ENDING SEPTEMBER 30, 1890.

THE COMMISSIONERS OF THE STATE RESERVATION AT NIAGARA, *in Account*
with HENRY E. GREGORY, *Treasurer.*

1889.

Oct.	1.	By balance on hand at this date.....	\$455 68
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RECEIPTS.

Oct.	9.	Quarterly advance from the State Comptroller	\$6,250 00
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1890.

Jan.	13.	Quarterly advance from the State Comptroller	6,250 00
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April	17.	Quarterly advance from the State Comptroller	6,250 00
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July	16.	Quarterly advance from the State Comptroller	6,250 00
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25,000 00

Special Appropriation under Chapter 570, Laws of 1889, for
"repairs of roads, bridges, and betterments, on the
Reservation."

1890.

April	16.	First advance by the State Comp- troller, on account	\$1,989 00
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May	19.	Second advance by the State Comp- troller, on account	3,164 12
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June	21.	Third advance by the State Comp- troller, on account	206 05
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June	26.	Fourth advance by the State Comp- troller, on account	2,076 35
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1890.			
July	25.	Fifth advance by the State Comptroller, on account	\$2,101 14
Sept.	12.	Sixth advance by the State Comptroller, on account	678 16
1889.			<hr/>
Nov.	1.	Draft on Cataract Bank, October receipts at Niagara	\$314 60
Dec.	2.	Draft on Cataract Bank, November receipts at Niagara	85 85
	31.	Draft on Cataract Bank, December receipts at Niagara	39 95
1890.			
Feb.	1.	Draft on Cataract Bank, January receipts at Niagara	35 50
March	1.	Draft on Cataract Bank, February receipts at Niagara	44 65
	31.	Draft on Cataract Bank, March receipts at Niagara	51 15
May	1.	Draft on Cataract Bank, April receipts at Niagara	113 15
	31.	Draft on Cataract Bank, May receipts at Niagara	330 55
June	30.	Draft on Cataract Bank, June receipts at Niagara	380 60
Aug.	1.	Draft on Cataract Bank, July receipts at Niagara	1,894 15
Sept.	2.	Draft on Cataract Bank, August receipts at Niagara	2,696 50
	30.	Draft on Cataract Bank, September receipts at Niagara	1,547 85
1889.			<hr/>
Dec.	31.	Interest on balances at Manufacturers and Traders' Bank	\$21 87
1890.			
March	31.	Interest on balances at Manufacturers and Traders' Bank	32 24
June	30.	Interest on balances at Manufacturers and Traders' Bank	40 27
Sept.	30.	Interest on balances at Manufacturers and Traders' Bank	41 41
			<hr/>
Total			135 79
			<hr/>
Total			\$43,340 79

EXPENDITURES.

1890.	No. of abstract.	No. of voucher.		
Oct. 10.	L	602.	Daniel Batchelor, Commis- sioner, traveling expenses,	\$12 50
Nov. 1.	L	603.	Pay-roll at Niagara for Oct.,	1,384 50
	L	604.	Thomas V. Welch, Superin- tendent, office expenses..	8 81
	L	605.	F. P. Lanigan.....	3 75
14.	L	606.	W, A. Fraser.....	16 00
	L	607.	Crocker Fertilizer and Chemical Co.....	33 00
	L	608.	W. Shepard.....	13 25
	L	609.	Ellenbaum & Co	25 00
	L	610.	H. S. Ware	98 30
	L	611.	Henry E. Gregory, Treas- urer and Secretary, Octo- tober salary.....	91 66
	L	612.	Henry E. Gregory, Treas- urer and Secretary, office expenses	12 61
	L	613.	William Young.....	3 10
	L	614.	P. B. Secord	15 08
	L	615.	P. B. Secord	223 04
	L	616.	P. B. Secord	169 92
	E	617.	G. E Wright & Co	48 22
				<hr/>
				\$2,158 74
Dec. 2.	LI	618.	Daniel Batchelor, Commis- sioner, traveling expenses,	\$11 43
	LI	619.	Daniel Batchelor, Commis- sioner, traveling expenses,	22 00
	LI	620.	James Mooney, Commis- sioner, traveling expenses,	43 47
	LI	621.	John Hodge, Commissioner, traveling expenses.....	28 60
	LI	622.	Pay-roll at Niagara for November.....	1,200 00
	LI	623.	Thomas V. Welch	47 36
6.	LI	624.	J. McCarthy	75 25
	LI	625.	William Thurecht	57 75
31.	LI	626.	Colman Nee.....	14 63
	LI	627.	John Sullivan.....	29 25
	LI	628.	H. S. Ware	52 42

1890.	No. of abstract.	No. of voucher.		
Dec. 31.	LI	629.	O. Canfield	\$17 00
	LI	630.	P. B. Secord	44 74
	LI	631.	Peter A. Porter	2 50
	LI	632.	Ward & Cobb.....	4 00
	LI	633.	Union Printing and Pub- lishing Co.....	4 00
	LI	634.	Niagara Falls Printing House	8 00
	LI	635.	S. S. Pumroy.....	2 50
	LI	636.	Wm. Pool & Son.....	2 50
	LI	637.	D. Lynch & Sons.....	4 00
	LI	638.	Milton C. Johnson & Co...	55 00
	LI	639.	Henry E. Gregory, Treas- urer and Secretary, salary for November and Decem- ber	183 32
	LI	640.	Henry E. Gregory, Treas- urer and Secretary, office expenses.....	6 11
	LI	641.	Pay-roll at Niagara for December	1,104 25
	LI	642.	Thomas V. Welch, Superin- tendent, office expenses..	4 75
	LI	643.	B. A. Rushton.....	10 75
				<hr/>
				\$3,035 58
Feb. 1.	LII	644.	Pay-roll at Niagara for January	\$1,095 50
	LII	645.	Thomas V. Welch, Superin- tendent, office expenses..	13 23
	LII	646.	Hart & Von Arx, 50,000 copies map and guide...	200 00
Mar. 1.	LII	647.	Henry E. Gregory, Treas- urer and Secretary, Jan- uary and February salary,	183 32
	LII	648.	Pay-roll at Niagara for February	1,013 50
	LII	649.	Thomas V. Welch, Superin- tendent, office expenses..	22 05
31.	LII	650.	M. A. McBean.....	4 85
	LII	651.	Philpott & Leuppie.....	5 05
	LII	652.	John Johnson.....	13 60

1890.	No. of abstract.	No. of voucher.		
Mar. 31.	LII	653.	O. Canfield	\$27 50
	LII	654.	George E. Wright & Co...	79 13
	LII	655.	H. S. Ware.....	75 94
	LII	656.	P. B. Secord.	36 13
	LII	657.	Ellenbaum & Co.....	33 50
	LII	658.	P. C. Flynn & Son....	54 70
	LII	659.	E. O. Babcock.....	13 49
12.	LII	660.	Hart & Von Arx, balance for 50,000 maps, etc.	385 00
31.	LII	661.	Henry E. Gregory, Treas- urer and Secretary, salary for March.....	91 66
	LII	662.	Henry E. Gregory, Treas- urer and Secretary, office expenses	61 36
	LII	663.	Pay-roll at Niagara for March.....	1,129 25
	LII	664.	Thomas V. Welch, Superin- tendent, office expenses..	37 70
				<hr/>
				\$4,576 46
Apr. 21.	LIII	665.	Hart & Von Arx, extra work on map and guide	\$100 00
May 1,	LIII	666.	Henry E. Gregory, Treas- urer and Secretary, salary for April	91 66
	LIII	667.	Pay-roll at Niagara for April.....	1,181 00
	LIII	668.	James McCarthy	87 50
	LIII	669.	Thomas V. Welch, Superin- tendent, office expenses..	41 38
June 6.	LIII	670.	Pay-roll at Niagara for May	688 13
	LIII	671.	James McCarthy	78 75
	LIII	672.	Thos. V. Welch, Superin- tendent, office expenses..	14 79
7.	LIII	673.	Henry E. Gregory, Treas- urer and Secretary, salary for May	91 66
10.	LIII	674.	Daniel Batchelor, Commis- sioner, traveling expenses	22 01
	LIII	675.	Daniel Batchelor, Commis- sioner, traveling expenses	19 20

1890.	No. of abstract.	No. of voucher.			
June 13.	LIII	676.	James Mooney, Commis- sioner, traveling expenses	\$4 28	
	LIII	677.	Milton C. Johnson & Co...	18 25	
	LIII	678.	T. R. Thomas & Co	9 00	
	LIII	679.	Ellenbaum & Co	16 62	
	LIII	680.	John Maloney	156 50	
	LIII	681.	H. S. Ware	105 88	
	LIII	682.	Wm. Wall's Sons	153 74	
	LIII	683.	O. Canfield	15 00	
	LIII	684.	William Young	11 35	
	LIII	685.	P. C. Flynn & Son	48 18	
	LIII	686.	Geo. H. Burdick	2 00	
	LIII	687.	H. F. McBride	19 50	
	LIII	688.	Geo. E. Wright	44 90	
	LIII	689.	Henry E. Gregory, Treas- urer and Secretary, office and traveling expenses..	61 33	
	LIII	690.	A. F. Allen & Co	479 61	
	LIII	691.	A. F. Allen & Co	181 15	
	LIII	692.	M. A. McBean	2 90	
					\$3,746 27
17.	LIV	693.	Pay-roll at Niagara for May	\$675 00	
26.	LIV	694.	Daniel Batchelor, Commis- sioner, traveling expenses	22 25	
30.	LIV	695.	Pay-roll at Niagara for June	1,298 59	
	LIV	696.	James McCarthy	95 38	
	LIV	697.	Thos. V. Welch, Superin- tendent, office expenses, etc	43 70	
	LIV	698.	Henry E. Gregory, Treas- urer and Secretary, salary for June	91 66	
					2,226 58
July 22.	LV	699.	H. S. Ware	\$138 16	
	LV	700.	Wm. H. Fraser	668 69	
	LV	701.	P. C. Flynn & Son	273 15	
25.	LV	702.	John Hodge, Commissioner, traveling expenses	8 82	
Aug. 5.	LV	703.	Pay-roll at Niagara for July	1,295 19	
	LV	704.	James McCarthy	108 50	

1890.	No. of abstract.	No. of voucher.		
Aug. 5.	LV	705.	Thos. V. Welch, Superinten- dent, office expenses, etc.	\$27 31
Sept. 2.	LV	706.	Pay-roll at Niagara for August	1,285 94
	LV	707.	James McCarthy	99 75
	LV	708.	Thos. V. Welch, Superinten- dent, office expenses, etc.	20 20
24.	LV	709.	Niagara Falls Water-Works Co.	140 00
	LV	710.	Phillips & Co.	5 61
	LV	711.	F. P. Jones	15 00
	LV	712.	H. S. Ware	172 47
	LV	713.	E. O. Babcock	15 26
	LV	714.	Henry E. Gregory, Treas- urer and Secretary, office expenses	13 94
	LV	715.	Henry E. Gregory, Treas- urer and Secretary, salary, July, August and Sep- tember	275 00
	LV	716.	P. C. Flynn & Son	85 34
	LV	717.	Philpott & Leuppie	41 72
	LV	718.	John Johnson	16 75
	LV	719.	P. B. Secord	34 04
				<hr/>
				\$4,740 84
30.	LVI	720.	Pay-roll at Niagara for September	\$1,262 17
	LVI	721.	Thos. V. Welch, Superin- tendent	29 13
	LVI	722.	James McCarthy	71 75
	LVI	723.	Daniel Batchelor, Commis- sioner	19 11
	LVI	724.	Henry E. Gregory	57 08
				<hr/>
				1,439 24

Remittances to the State Treasurer.

1889.				
Nov.	1.	Draft for October receipts.	\$314	60
Dec.	2.	Draft for November receipts.	85	85
	31.	Draft for December receipts.	39	95
1890.				
Feb.	1.	Draft for January receipts	35	50
Mar.	1.	Draft for February receipts	44	65

1890.

Mar. 31.	Draft for March receipts	\$51 15	
May 1.	Draft for April receipts	113 15	
31.	Draft for May receipts	330 55	
June 30.	Draft for June receipts	380 60	
Aug. 1.	Draft for July receipts	1,894 15	
Sep. 2.	Draft for August receipts	2,696 50	
30.	Draft for September receipts	1,547 85	
		<hr/>	\$7,534 50

Remittances to State Treasurer.

1889.

Dec. 31.	Draft for interest received.....	\$21 87
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1890.

Mar. 31.	Draft for interest received.....	32 24
June 30.	Draft for interest received.....	40 27
Sept. 30.	Draft for interest received.....	41 41

135 79

*Payments out of Special Appropriation under
chapter 570, Laws of 1889, for "repairs of roads,
bridges and betterments on the Reservation."*

	No. of abstract. Series A.	No. of voucher.		
Apr. 18.	1		1. Phillips & Young, labor and materials construct- ing crib-work on Goat Island	\$1,989 00
May 20.	1		2. Phillips & Young, second payment	3,164 12
June 21.	1		3. Ely & Dudley, docking and crib-work	10 00
	1		4. Walter Latta, trees	149 85
	1		5. Walter Latta, trees	11 70
	1		6. Selover & Atwood, trees ..	14 50
	1		7. Jas. Reynolds, monuments,	6 00
	1		8. P. B. Secord, trees and in- clined railway	14 00

Abstract No. 1.....\$5,359 17

1890.	No. of abstract.	No. of voucher.		
June 26.	II		9. Phillips & Young, labor and materials	\$1,964 78
	II		10. Phillips & Young, labor and materials	111 57
			Abstract No. 2	<u>\$2,076 35</u>
July 25.	III		11. Phillips & Young, crib- work	\$2,063 96
	III		12. Phillips & Young, docking,	37 18
Sept. 12.	III		13. C. W. Tift Sons and Co., iron stairway	15 85
	III		14. G. Elias & Bro., timber stairway	156 60
	III		15. W. Shepard, mason work on stairway	118 50
	III		16. Geo. E. Wright, stairway to the spring	159 91
	III		17. P. C. Flynn & Son, stairway to the spring	27. 30
	III		18. The Howard Iron Works, seats	200 00
			Abstract No. 3	<u>\$2,779 30</u>
				<u>\$10,214 82</u>
				\$39,808 82
Sept. 30.			Cash balance in Treasurer's hands	3,531 97
				<u>\$43,340 79</u>

HENRY E. GREGORY,
Treasurer.

Examined and found correct.

JOHN M. BOWERS.

CLASSIFICATION OF ACCOUNTS.

Commissioners' expense	\$213 67
Fences	26 40
Secretary and treasurer	1,099 94
Secretary, traveling expenses	79 70
Secretary, office expenses	183 48

78 REPORT OF COMMISSIONERS OF STATE RESERVATION AT NIAGARA.

Inclined railway, repairs, etc.	\$2,123 29
Office expense, Niagara....	296 69
Crosswalks	3 91
Ice.....	156 50
Trees	193 43
Stationery	28 75
Expense	719 50
Surveying	156 43
Cribbing	176.18
Coal.....	134 62
Stairway.....	120 95
Sidewalks	439 13
Salary (Niagara).....	2,771 68
Railing	88 03
Police	5,107 50
Cartage	11 40
Goat island	957 01
Grading	69 00
Insurance.....	3 75
Bridges	9 50
Gas	19 44
River street.....	114 77
Water pipes.....	63 28
Gas pipe....	3 00
Settees	54 70
Pier.....	1 50
Advertising	23 50
Walks	1,144 64
Buildings.....	1,774 78
Water supply	215 98
Tools, etc.....	82 55
Seed	17 75
Roads	2,348 71
Printing	1 50
Prospect park.....	887 17
	<hr/>
	\$21,923 71
Special improvements, made under chapter 570, Laws of 1889	10,214 82
	<hr/>
Total.....	\$32,138 53
	<hr/> <hr/>

A P P E N D I X.

LETTERS.

NEW YORK, *October 21, 1889.*

HON. JOHN BOGART, *State Engineer and Surveyor, Albany :*

DEAR SIR.—Some weeks ago, Mr. A. S. Kibbé, one of your assistants, presented to me a letter of introduction from you, and requested information and directions concerning the surveying work at Niagara, which you were authorized to undertake under chapter 570, Laws of 1889. Mr. Kibbé, at that time, remarked that he purposed very soon to go to Niagara. I stated to him my views of what surveys should be undertaken. Our superintendent's latest advices inform me that Mr. Kibbé has not yet appeared at Niagara. Will you not kindly see to it that the surveys are begun as early as possible? I deem it important that these surveys should be entered upon and prosecuted with all reasonable dispatch.

Very respectfully.

ANDW. H. GREEN,
President.

NEW YORK, *December 18, 1889.*

MR. A. S. KIBBE, *Niagara Falls :*

DEAR SIR.—In accordance with a suggestion received from Professor Gilbert, I would direct your attention to the importance of erecting additional monuments at Niagara, and the connection of these monuments with geodetic points already established, by triangulation. In this way future surveys will be enabled to connect their results definitely with those of the past.

Yours very respectfully.

ANDW. H. GREEN,
President.

NEW YORK, *January 3, 1890.*MR. A. S. KIBBE, *Niagara Falls:*

DEAR SIR.—Will you, while at the Falls, please obtain as accurate information as you conveniently can of the topography of the country, and the location and character of the more conspicuous structures thereon, say for a mile back from the river and as far down as the Whirlpool and say an eighth of a mile beyond.

It may be that, upon consideration of the subject of an ornamented way from the Falls to the Whirlpool, it will prove desirable, for artistic or economical reasons, to provide for the deflection of the road from the river bank.

The value of the land and improvements, as well as natural obstacles, might make it eventually undesirable to locate the road all the way in close proximity to the river bank.

It is advisable, therefore, to have some familiarity with the country, as it stretches back a mile or so from the river, so that the best location for the proposed road may be determined with all needed information before us.

Very respectfully yours.

ANDW. H. GREEN,

*President.*NEW YORK, *February 18, 1890.*HON. GEORGE B. SLOAN, *Senate:*

DEAR SIR.—I am informed that the Ways and Means Committee of the Assembly, in preparing the Annual Appropriation bill, has reduced the allowance for the care and maintenance of the Niagara Reservation from \$25,000 to \$20,000. Without going into an extended statement as to the necessity of an appropriation sufficient to maintain the Reservation in a creditable manner, it will perhaps be enough to direct your attention to chapter 380, Laws of 1889, by which the pay of State laborers was fixed at not less than two dollars per day and of those otherwise employed at not less than twenty-five cents per hour. The consequence of this has been considerably to increase our pay-roll. The Commissioners, in their annual report, stated that, on account of this increase in wages and salaries, they were unable to accomplish any more with \$25,000 than formerly with \$20,000. To keep the place in order we must have adequate means, and we shall not ask for any larger appropriation than is needed.

You will observe that the Reservation is of very little expense to the State. We turned over to the State treasury last year \$7,393.77,

so that the actual cost to the State of maintaining the Reservation was only \$12,606.23.

We had hoped early in the session to place our annual report before the Legislature, but unfortunately it has not yet emerged from the hands of the State printer. A type-written copy of that document can be sent to you if you should care to look over it.

Yours very respectfully.

ANDREW H. GREEN,

President.

NEW YORK, *April 23, 1890.*

HON. GEORGE B. SLOAN :

DEAR SIR.—In their last annual report to the Legislature, the Commissioners of the State Reservation at Niagara respectfully submitted what they deemed a very moderate estimate of moneys needed for care and maintenance for the next ensuing fiscal year, and also a statement of the amounts required for permanent improvements on the Reservation. For the ordinary expenses of the care and maintenance of the State property the Commissioners deemed the sum of \$25,000 necessary, and for permanent improvements the sum of \$66,500.

I learn that the Annual Appropriation bill that has recently passed the Legislature allows the Commissioners the sum of \$20,000 instead of \$25,000, the amount required, and the same amount that was allowed by the Legislature last year. This reduction will embarrass us in carrying on the work at the Reservation. I trust, however, that you will have the kindness to see that adequate provision is made for permanent improvements, which have hitherto, for want of means, been scarcely begun.

The business of the Commission is, I think, conducted with economy, and it is not intended to ask for more money than is needed. The property of the State at the Falls can not be restored to the condition contemplated at its acquisition, which is simply that in which it originally was before it suffered defacement and injury at the hands of man, without money. It would be unfortunate should accidents happen on any of the various structures within the Reservation, required for the public convenience, for want of the necessary money for their repair and renovation. It is but right that those parts of the Reservation, approach to which is naturally difficult, and not free from danger, should be made easily accessible, and that the means of approach should be both convenient and safe. The stairway which now affords the only means of descent to the base of the cliff between

the Horseshoe and the American Falls is old and ill adapted for the use of the numerous visitors who desire to see the Falls from below. The aged and weak, invalids and convalescents, who visit Niagara are prevented from enjoying this unsurpassed view, which is especially attractive, because there are no means of descent which can be made use of by them. The elevator which has been constructed in the Canadian park has proved a great convenience to the public. The revenue from the use of it from May 24, 1888, the day the Canadian park was opened, to December 31, 1888, a period of about seven months, was \$3,029.35. There can be little doubt that the receipts from an elevator on the Reservation, at a very low rate, would be as much, if not more, than the receipts from the inclined railway, which, during the last fiscal year, amounted to \$5,074.10.

There should be constructed in connection with the elevator a substantial stairway, which will render access to the foot of the Falls convenient and safe, and it should be free of charge to everybody.

It is estimated that about five hundred thousand persons annually visit the Reservation. Among these, it may be assumed, that there are many of cultivation and refinement from all parts of the civilized world. The indifferent condition of portions of the Reservation can not fail to excite criticism unfavorable to the State. The work of restoration has, for want of money, hardly been begun, although nearly five years have elapsed since the Reservation was formally opened to the public. The Commissioners can do no more than state the facts to the Legislature. They would be very much obliged to you if you will use the influence of your position to enable them to put the Reservation in a condition that will be creditable both to their administration and to the State.

Very respectfully yours.

ANDW. H. GREEN,

President.

NEW YORK, April 24, 1890.

HON. JOHN BOGART, *State Engineer and Surveyor:*

DEAR SIR.—I have received the maps and drawings which were made at Niagara by your direction. They are quite satisfactory, and I am very much obliged to you for the interest and attention which you have given to the work of the Reservation.

I should like to have a map of the land from the Falls to the Whirlpool reduced to a more convenient size, so as to show, on a smaller scale, the whole route. Will you be able to furnish me with this?

As no report of the operations at the Falls accompanies the drawings, I suppose it is not yet completed. I should be glad to have it at an early day.

Have you an assistant who is familiar with different methods of road making that you might send to Niagara to supervise some experiments that it is proposed to undertake, to determine which method will be the most satisfactory?

Very respectfully.

ANDW. H. GREEN,

President.

NEW YORK, September 10, 1890.

HON. JOHN BOGART, *State Engineer and Surveyor:*

DEAR SIR.—If you can conveniently do so, will you be kind enough to request your assistant, Mr. A. S. Kibbé, to call on me at an early day.

I should like to have him give me some explanations of the maps of the Niagara region that you sent me some time since, and also any information that may be of assistance to us in our future work at the Falls.

Very respectfully yours.

ANDW. H. GREEN,

President.

NEW YORK, October 25, 1890.

HON. JOHN BOGART, *State Engineer and Surveyor, Albany:*

DEAR SIR.—I wrote you on September tenth, asking you to have Mr. Kibbé call on me with reference to the recent surveys at Niagara. I have not seen Mr. Kibbé. When will he be able to call?

I should like to have your opinion concerning the effect upon the volume of water at the American Fall, of the diversion of a large amount of the water of the river into the tunnel about to be constructed at Niagara.

Very respectfully yours.

ANDW. H. GREEN,

President.

It is essential that we have your report on the survey at Niagara, without further delay. Please also express your official opinion on the character and utility of the crib-work on the south shore of Goat island.

NEW YORK, *December 2, 1890.*HON. JOHN BOGART, *State Engineer and Surveyor*:

DEAR SIR. — The Commissioners of the State Reservation at Niagara are to hold a meeting at this office Monday, the eighth instant. This will be their last meeting before the Legislature convenes. I should like, at that time, to be able to present to the Commissioners the report on the surveys at Niagara, that you have been preparing; also a statement of your opinion concerning the effect upon the American Falls of the diversion of a large volume of water from the river into the tunnel, now being constructed at Niagara.

I have not yet seen Mr. Kibbé with reference to the maps and surveys, which he made at the Falls. Can he not call on me before the meeting on the eighth instant.

Very respectfully.

ANDW. H. GREEN,
President.

STATE OF NEW YORK.

OFFICE OF THE STATE ENGINEER AND SURVEYOR, }
ALBANY, N. Y., *March 31, 1890.* }HON. ANDREW H. GREEN, *President Commissioners of the State Reservation at Niagara, 214 Broadway, New York*:

DEAR SIR. — Under chapter 570 of the Laws of 1889, the State Engineer and Surveyor was authorized to make such surveys and maps and to set such monuments as may be requested of him by the Commissioners of the State Reservation at Niagara.

In accordance with a request from you as president of that Commission, certain surveys and maps have been made and monuments set. An assistant engineer, Mr. A. S. Kibbé, was detailed from this department to take immediate charge of these surveys, and the State Engineer has personally spent some time at Niagara directing the work.

In a personal interview you gave the general outline of what was desired by the Commission, and requested that the superintendent of the Reservation, Mr. Thomas V. Welch, should be consulted as to details.

In accordance with the request, thus expressed by yourself and Mr. Welch, a survey has been made of that portion of the lands between Niagara Falls and a point below the Whirlpool, indicated as

being desired for the purpose of making a study for the location of a roadway or boulevard.

There are transmitted herewith eight sheets of maps, with a title sheet, showing the topography and structures in the indicated district. No suggestions are made as to the location of a boulevard or roadway, because you have not requested such suggestions from the State Engineer.

In accordance with your further request, surveys have been made of the crests of the Falls. The maps giving the results of these surveys, and comparisons with former surveys are in progress and will be transmitted to you when completed.

Very respectfully.

JOHN BOGART,

State Engineer and Surveyor.

P. S.—A copy of letter of Assistant Engineer Kibbé accompanies the maps.

ALBANY, N. Y., *March 24, 1890.*

HON. JOHN BOGART, *State Engineer and Surveyor, Albany, N. Y.:*

DEAR SIR.—I beg to submit herewith the results of the survey recently completed at Niagara Falls.

The accompanying topographical map of the eastern bank of the river covers a belt of width varying according to circumstances and extending from the village to a point 1,500 feet below the Whirlpool. A scale of one six-hundredths was adopted in order that existing structures might be represented in such proportions as to indicate their nature and value. Unless otherwise stated all buildings are wooden frames. There are added contour lines for every two feet in elevation, numbered in accordance with the tide water datum of the New York canals. The line of the survey is in blue with distances and deflections at each angle indicated.

From the Whirlpool down (to the northeast), for a distance of 1,500 feet, the brinks of the high banks on both sides of the river, together with the water line at ordinary stage, were carefully located by triangulation, and the points X and A marked by permanent monuments.

East of the district shown on the maps there exist no serious topographical obstacles to the construction of a road from the Reservation to the Whirlpool. The ground is slightly rolling and all grades in the neighborhood are easy. The village of Suspension

Bridge forms the most serious obstacle on the direct line and the map will serve to illustrate the difficulties to be met in traversing it.

Sheet 8 is a tracing of a portion of a recent map of the village of Niagara Falls, and to it I have added the mill structures existing from the edge of the high bank to the hydraulic canal, all to illustrate the conditions governing a proper location through its limits.

In the vicinity of the Whirlpool, the cliffs and talus are of the same nature as those upon which cantilever and old suspension bridges rest, about one mile up stream, and conditions obtaining there would hold good here.

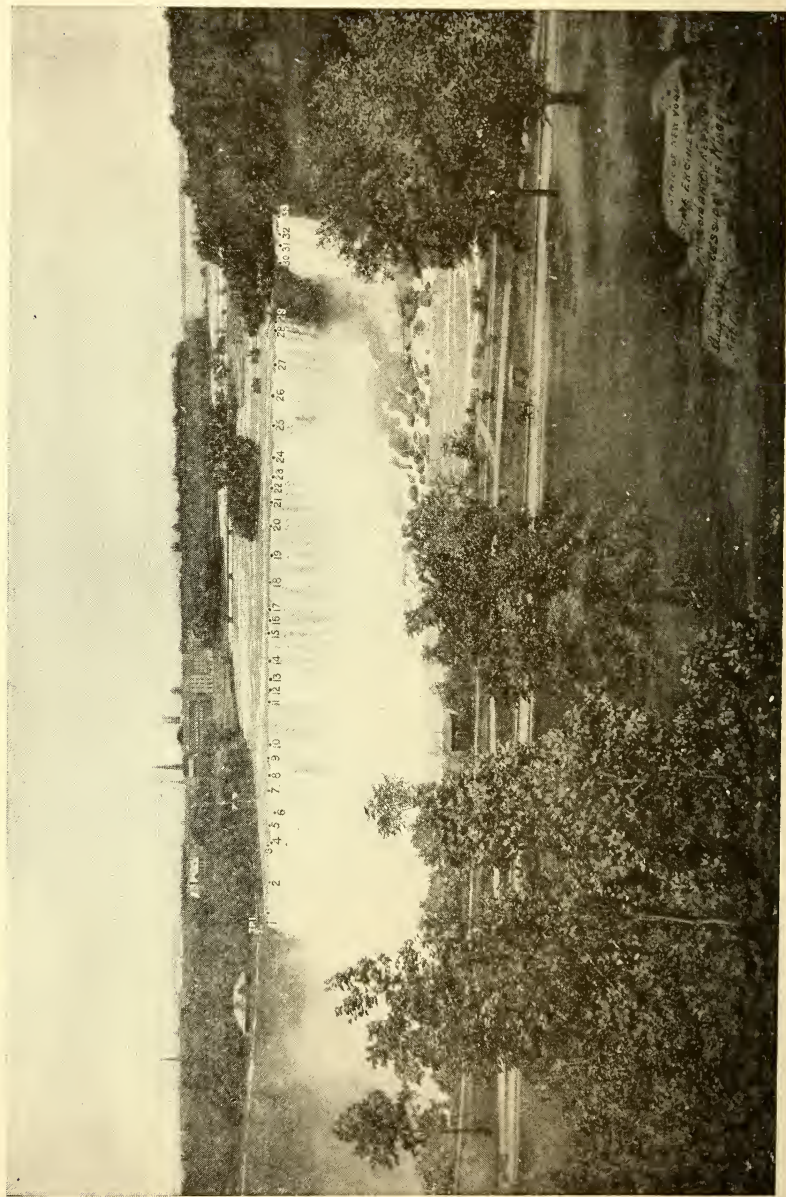
Very respectfully submitted.

AUG. S. KIBBÉ,

Assistant Engineer in Charge.



AMERICAN FALL FROM STATION O.



AMERICAN FALL FROM BLUFF BACK OF CANADIAN RESERVATION.

REPORT

OF

John Bogart, State Engineer and Surveyor, on the Outline of the Crest of the Falls of Niagara in 1890, and the Recession of the Falls since 1842.

STATE OF NEW YORK:

OFFICE OF THE STATE ENGINEER AND SURVEYOR, }
ALBANY, N. Y., December 2, 1890. }

HON. ANDREW H. GREEN, *President of the Commissioners of the State Reservation at Niagara:*

SIR.—I am glad to be able to present to the Commissioners of the State Reservation at Niagara a map giving the crest lines of the two Falls at Niagara, the line of the river and bank along Goat island between the American and the Horseshoe Falls, and the line of the river and the Canadian bank from the Canadian Falls to a point opposite the lower side of the American Falls.

By the provisions of chapter 570 of the Laws of 1889, the State Engineer and Surveyor was authorized to make such surveys and maps, and to set such monuments as might be requested of him by the Commissioners of the Reservation.

At your suggestion a survey has been made determining the crest lines of both Falls and of the bluffs, and in this connection an examination has also been made of such former surveys as seem to be of sufficient accuracy, or of which the records have been found sufficiently full, to warrant their use in comparison with the present survey, with a view to determining facts as to the actual recession of the Falls during certain known periods.

With a view also to future observations of the same character, the present survey has been made from and connected with per-

manent monumented stations, so located and determined that subsequent accurate surveys of the crest can be made with very little expenditure of time. The location of these monumented stations will be fully described in this report and they are indicated upon the accompanying map.

The survey of the present crest line has been made under my direction by Mr. A. S. Kibbe, Assistant Engineer in charge, and extracts from his report on this survey, and also tables of determined data are transmitted herewith. The present survey has been fully connected with such monuments of the former surveys as remained and whose location could be accurately ascertained. Fourteen additional permanent monuments have been established. All reference points have been connected by careful triangulation.

The instrumental observations to determine the crest line of the Falls were made so as to show as closely as possible the actual crest line of the rock, as it would appear were no water flowing over it. This has not been found particularly difficult except at points most distant from the shore in the Horseshoe Falls and in the Horseshoe curve itself at the points of greatest recession. However, by multiplying the observations made upon these points and by comparison of observations made from different stations, a result has been obtained which is believed to be closely and substantially accurate.

The details of the observations and the tabular location of each point are given in the report of Assistant Engineer Kibbe.

The line shown in full black on the map may therefore be accepted as the actual crest line of the Falls in the year 1890.

A comparison with the actual crest line in former years will certainly be interesting. Unfortunately the earliest survey of which we have such data as to make a comparison of value was made only forty-eight years ago.

Much has been written about the recession of the Falls and there have been very interesting geological treatises and discussions on the subject. We are not aware, however, of any record made previous to 1842 with which accurate comparison can be established. At that time a survey was made under the able direction of Professor James Hall, then and now the State Geologist of the State of New York. Sufficient of the monumented points of that survey have been now located, so that we have been able to place upon the map the crest lines as then determined and to show its relation to the present crest.

The result is of decided interest. We know where the Falls were fifty years ago and we see the characteristics of the moderate recession which has occurred during that time.

The State of New York is to be congratulated that it had in its service as State Geologist a man who not only appreciated the importance of accurate measurements and of accurate, permanent record of such measurements, but who also personally directed the execution of such a survey and made such a record in his report on the geology of the fourth district of the State of New York.*

In the year 1875 a survey of the crest lines was made by the Corps of Engineers of the United States Army in connection with the United States Lake Survey. From the chart accompanying the report of that survey, made under the direction of General C. B. Comstock, Corps of Engineers, U. S. A., in 1875, the outline of the crest at that date is transferred to the map accompanying this report.

In 1886 a survey of the crest was made by Professor Robert S. Woodward, Chief Geographer of the United States Geological Survey. The results of that survey not having been published in a complete form, and their importance in connection with this subject being very great, I am gratified to be able to present in connection with this report the complete survey and map, obtained for this purpose through the courtesy of Major J. W. Powell, Director of the United States Geological Survey, and of Robert S. Woodward, Esq., till recently its Chief Geographer. The line of crest thus determined is laid down also upon the map presented herewith.

We thus have upon this map the crest lines as they were represented to exist in 1842, in 1875, in 1886 and as they now exist in 1890.

In the comparison of these lines certain discrepancies must be referred to. The most notable one is the apparent great recession from the line of 1842 to the line of 1890 in the vicinity of Terrapin Rocks and on the Canadian shore directly opposite, near the former table rock. Recession has not taken place to the extent thus indicated. Mr. Kibbe gives in his report a probable explanation, showing at the same time that the crest of the Horseshoe itself, in 1842, is probably shown on the map with substantial accuracy with reference to the line of 1890. Another apparent error is where the line of 1886 passes above the line of 1890 in the extreme point of recession of the

*Natural History of New York. Geology of New York, Part IV. Survey of the Fourth Geological District.

Horseshoe. Here, again, the explanation of Mr. Kibbe seems quite satisfactory.

The main purpose of the present survey and map, however, being to give and preserve an exact record of the actual crest line in 1890, the other surveys have been plotted thereon with care as shown on their respective maps and no effort has been made to reconcile apparent discrepancies, nor has any change been made in the line of either of those surveys.

The following tables give the results of measurements of the recession between the lines of the surveys above referred to:

PRECESSION OF NIAGARA FALLS.

AMERICAN FALLS.

FROM	AREA RECORDED IN SQUARE FEET.			Crest length in feet.	MEAN CREST LENGTH IN FEET.			MEAN RECESSION IN FEET.			MEAN ANNUAL RECESSION IN FEET.		
	To 1875.	To 1886.	To 1890.		To 1875.	To 1886.	To 1890.	To 1875.	To 1886.	To 1890.	To 1875.	To 1886.	To 1890.
1842	25,100	26,300	32,900	1,080	1,030	1,010	1,070	24.37	26.04	30.75	0.74	0.69	0.64
1875 .....	.....	1,200	7,800	980	.....	960	1,020	.....	1.25	7.64	.....	0.11	0.51
1886 .....	.....	.....	6,600	940	.....	.....	1,000	.....	.....	6.60	.....	.....	1.65
1890 .....	.....	.....	.....	1,060	.....	.....	1,050	.....	.....	.....	.....	.....	.....

HORSESHOE FALLS.

[illegible]

The preceding tables give quite clearly the comparisons between the different surveyed crest lines. It will be noticed that the mean annual recession at both falls was much greater during the last four years than previously. This, however, was due to the fact that there was, in January, 1889, a fall of considerable masses of rock.

The general result of the comparison between the lines of 1842 and 1890 is, in my opinion, a substantially correct record of the mean annual recession. It shows that at the American Falls there has been a mean recession of sixty-four one-hundredths feet ($7\frac{6.8}{100}$ inches) yearly for forty-eight years, and at the Horseshoe Falls a mean recession of two and eighteen one-hundredths feet (2 feet $2\frac{1.6}{100}$ inches) yearly for forty-eight years.

The American Falls show a mean total recession of thirty and seventy-five one-hundredths feet in forty-eight years. The Horseshoe Falls show a mean total recession of $104\frac{5.1}{100}$ feet in forty-eight years.

The length of the crest line of the American Falls was 1,080 feet in 1842, and is 1,060 feet in 1890.

The length of the crest line of the Horseshoe Falls was 2,260 feet in 1842, and is 3,010 feet in 1890.

The total area of recession, or of the rock which has disappeared, between 1842 and the present year, 1890, is, at the American Falls, 32,900 superficial feet, or seven hundred and fifty-five one-thousandths of an acre. The total area of recession between 1842 and the present year, at the Horseshoe Falls, is 275,400 superficial feet, or six and thirty-two one-hundredths acres.

In closing this report I desire to express my hope that measures may be taken to carefully preserve the monumented points of this survey, and that should any changes of surface become necessary at the location of those points the State Engineer and Surveyor may be requested to define and relocate such points. I also hope that similar surveys may be made at short intervals so that the record of the action of this great natural feature of our country may be accurately made and permanently recorded.

In the work incident to this survey Mr. James Wilson, the Superintendent of the Queen Victoria Niagara Falls park, has aided greatly, both by his personal assistance in simultaneous observations and by placing his intimate knowledge of the locality at our disposal. The Superintendent of the New York State Reservation, Mr. Thomas V. Welch, has also given constant and experienced assistance.

Very respectfully.

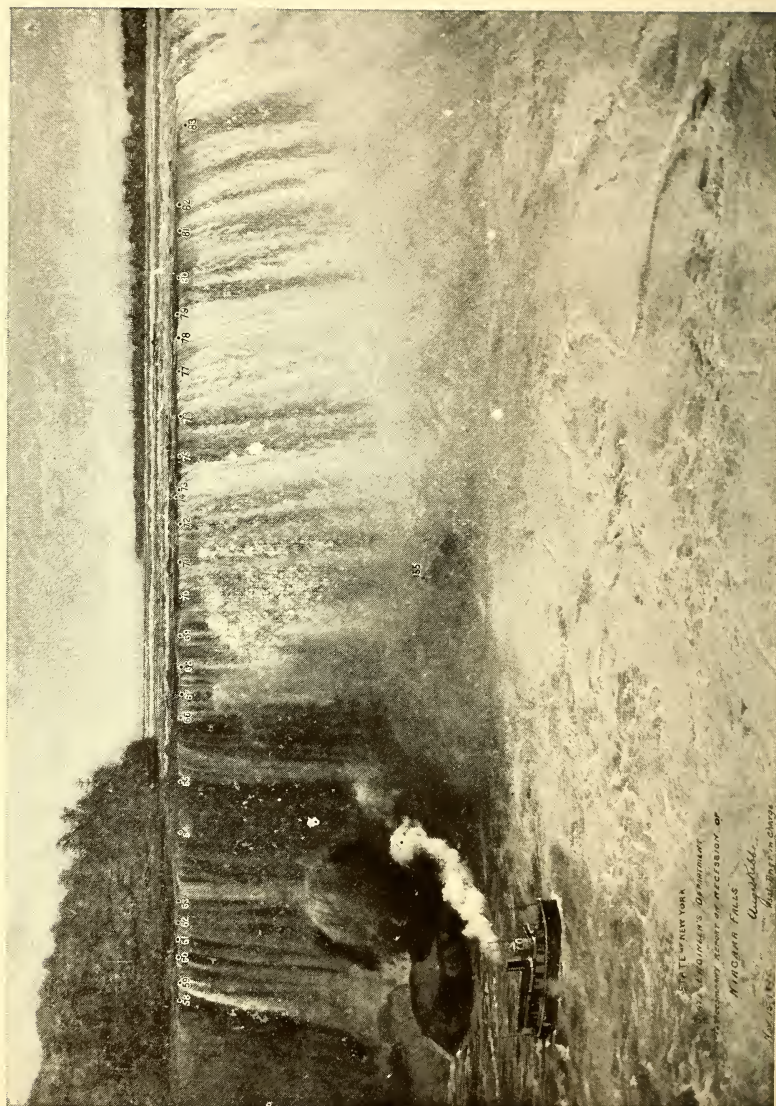
JOHN BOGART,

State Engineer and Surveyor.



STATE OF NEW YORK
 STATE ENGINEER, ALBANY
 TO ACCOMPANY REPORT AND ELEVATION OF
 NIAGARA FALLS
 August 1880
 ALBANY, N. Y.

WESTERN ARM OF HORSESHOE FALL.



EASTERN ARM OF HORSESHOE FALL.

There are filed with this report:

One map of the present survey, with the lines of former surveys.

One map of the survey of 1842, by Professor James Hall.

One map of the survey of 1875, by the United States Lake Survey.

One map of the survey of 1886, by Professor Robert S. Woodward.

Four photographs of the Falls in 1890, used in connection with the present survey.

REPORT

OF THE

Survey to Determine the Crest Lines of the Falls of Niagara in 1890, made under the direction of John Bogart, State Engineer and Surveyor, by Aug. S. Kibbe, Assistant Engineer in Charge.

With copy of the lists of co-ordinates used and determined in a survey of Niagara Falls, made in 1886, for the United States Geological survey, by Prof. R. S. Woodward.

STATE OF NEW YORK :

OFFICE OF THE STATE ENGINEER AND SURVEYOR, }
ALBANY, N. Y., *November 15, 1890.* }

HON. JOHN BOGART, *State Engineer and Surveyor, Albany, N. Y. :*

SIR.—I have the honor to transmit the following report upon the determination of the present crest lines of the Falls of Niagara, and the comparison of these results with those of past surveys.

By the courtesy of Hon. J. W. Powell, director of the United States Geological Survey, and of Mr. Robert S. Woodward, until recently Chief Geographer of the survey, I am enabled to present the complete results and map of the survey made by the latter in 1886.

There are also transmitted herewith, for filing in the archives of the department, three large photographs, one of the American Falls and one of each arm of the Horseshoe Falls. These were employed during the survey and were found of great value. They will serve as a record of the aspects of the Falls at the time of the survey. On them are marked the points observed and their numbers to correspond with the tables of co-ordinates accompanying this report. A smaller photograph of the American Falls, from Station O, shows its outline quite perfectly.

The subject has been treated solely in its geographical aspect, and while this must ever be subordinate to the greater geological problems presented, an accurate record of the conduct of this great cataract will be of lasting value. To accomplish this end, frequent surveys are required. Hitherto, much preliminary work has been necessary, prior to actual observations upon the crests themselves. The observer in the future will be supplied with over twenty monumented stations, accurately located, and all that will be necessary to afford data for an accurate determination of the crests of the two Falls, is a few days' work in the field.

It is a well known fact that the rock falls in large, irregular masses, the recession from 1886 to 1890 having taken place at practically one time, in the month of January, 1889, and the more frequent the examinations, the more faithful will be the record. Such examinations might be confined to such portions of the crest as had been observed to alter, but, independently of these, periodic surveys are very desirable and it is greatly to be hoped that the Legislature of the State may make provisions for such systematic record.

I would also direct attention to the very interesting and important transformation that is taking place in a similar manner, at the Portage Falls of the Genesee river, and would suggest their recession as a field for valuable work of this character.

RECESSION OF NIAGARA FALLS.

PAST SURVEYS.

1842. The first survey of which we have records sufficient to warrant use in comparison is that made in 1842, under the direction of Professor James Hall, State Geologist of New York, the report upon which, with an engraved map, drawn to a scale of 1:4800, is given in the "Geology of New York, Part IV," pages 402-404. A base line was established along the river bank from the northern end of the American Falls easterly, from the extremities of which bearings were determined to a point on the northern end of Goat island. From the point thus established a traverse line was run along the western and southern sides of the island. From the stations in this line bearings were determined to various points and stations on the Canadian shore. The stations thus established were monumented substantially, and formed the points from which the crest lines were observed and located. All traces of monuments on the Canadian side have disappeared, but four remain in an excellent state of preservation on the American side. (One of these, No. 2, located near the Rapids gate of Prospect Park, at

easterly end of 1842 base, being unavailable for observation on the Falls, was not included in the triangulation of 1890.)

1875. Incidentally to the work of the United States Lake Survey, the crest lines of the Falls were determined and, on an engraved chart of the "Vicinity of Niagara Falls," published along with the charts of the great lakes there is drawn an outline of the crests, to a scale of 1:5000. In addition to the 1842 monuments, then remaining, which monuments were included in, and located by, the survey, several holes were bored into the surface rock at various points and lead or copper inserted. Of these all but two have disappeared, "L. S. IV." having been blasted out in the construction of a raceway on the Canadian side, during the winter of 1888-1889. (L. S. V., on the southern shore of Goat island, is included in the 1890 triangulation.)

1886. On the occasion of the Buffalo meeting of the American Association for the Advancement of Science, Prof. Robert S. Woodward, Chief Geographer of the United States Geological Survey, made a determination of the crest lines of the Falls and marked in addition a point at the "Terrapin Rocks," as nearly as possible coincident with the station occupied there in 1875. This point constitutes station Terrapin of the 1890 triangulation. Professor Woodward's results and map never having been published complete are transmitted as an appendix to this report.

SURVEY OF 1890.

In accordance with your instructions, I have made a careful survey of the crest line of both Falls and of the bluff, the survey extending from Prospect point, on the American side, to the head of the road to the "Maid of the Mist" landing, on the Canadian side.

A preliminary examination elicited the fact that there remained available four monuments placed in 1842 by the State Geologist of New York; one monument placed in 1875 by the United States Lake Survey and three marked in 1886 by Prof. R. S. Woodward of the United States Geological Survey. Of these, three (two of 1842 and one of 1875) are no longer available for direct observation on the Falls and two are liable to destruction. They are, with one exception, on the New York side, and the sole remaining one on the Canadian side, being on top of the cupola of a high building, is inaccessible to direct measurements. It was therefore deemed advisable to establish, in addition, fourteen permanent monuments, so located as to facilitate future observations and to insure accuracy in comparison. The whole system, old and new, was then connected by triangulation.

An astronomical meridian having been determined, the rectangular co-ordinates of each of these stations were computed with monument

T. P. No. 1, as the origin, and a meridian and parallel of latitude as axes. In Table I. will be found a complete list of these stations, with a description of each, together with its co-ordinates.

Points other than stations may be divided into two classes, accessible and inaccessible.

The brink of the bluff on Goat island and on the Canadian side, with the shore line of the river, constitute the accessible portions. Points on the former were determined by observations from three different stations. The shore line being merely incidental to the work, was located by simultaneous observations from two stations.

Points shown on Goat island are taken like those of 1886, on the upper edge of the vertical face of the rock bluff.

Points on the crest lines of the Falls are not only inaccessible but oftentimes extremely indefinite, and it is only with the greatest difficulty that consistent results are to be obtained throughout. The endeavor has been to represent what would be the contour of the crest line were no water flowing over. Along the American Fall this is comparatively easy, the water being so shallow that the configurations of the rock are plainly discernable. This line was determined by observation from stations O, C and D, on each point.

The Horseshoe Fall presents many obstacles to accurate location. At the ends the conditions are similar to those on the American Fall, but the nearer the middle of the channel is approached the deeper becomes the water, and the more difficult is the identification of the crest. It is on this portion that the difference in phase of curves, as viewed from different points, is most troublesome. Various schemes involving floats, etc., were discussed but rejected as impracticable, and the method finally adopted was to make the time interval between observations on the same points from different stations as small as possible, making a memorandum of appearance through the telescope and trusting to memory, aided by large photographs from various stations, to identify the points selected. The more indefinite the point, the greater was the number of observations taken upon it. A careful plot, by angles, being made immediately after observation, discrepancies were readily detected and any erroneous angle identified and corrected by repetition. The most important point, and the one most difficult of location, *i. e.*, that of furthest recession, was observed from no less than eight stations, while the more favorable points required but three observations, two to locate and one to check.

From these observations the co-ordinates of the points observed were calculated, with the same origin and axes as before, and the results incorporated into Table II. For further convenience

Table III is added, giving the horizontal distances between various monuments.

Incidentally, the magnetic declination was determined approximately from the mean of observations in various portions of the two reservations, with an ordinary transit needle, with a result in February, 1890, of $4^{\circ} 3' W$.

With reference to probable error, it is safe to state that with the exception of Loretto, the relative positions of the monuments as given by their co-ordinates in Table I are correct within one-tenth of a foot. The inclemency of the weather and the almost incessant mist arising on line between Loretto, and the stations on the American side have rendered its location somewhat less accurate. The probable error in the length of the measured base D N is very small, ± 0.01 foot. For favorable locations on the crest lines the probable error is ± 1.0 foot, while along the deep water portion of the Horseshoe Falls it may become somewhat greater.

MAPS AND COMPARISON OF RESULTS.

There is submitted herewith a map setting forth the results of the four surveys above cited, each with its distinctive line. In preparing this the results of 1890 work were plotted first as a basis for the remainder.

In combining the 1842 results with these the map mentioned on page 97 was employed, and a line between T. P. 1 and T. P. 6 taken as a basis. A discrepancy becomes apparent at once, for it is certain that neither in the vicinity of the Terrapin rocks nor in that of Table Rock has recession taken place to the extent indicated, and the following explanation appears reasonable:

The whole curve of the Horseshoe Falls, *with the exception of the first three points, 25, 26 and 27*, is shown on the 1842 map to have been located by bearings from the extremities of the line between T. P. 6 and T. P. 5. Station T. P. 9, near Table rock, is likewise shown. This base line was but 448.8 feet in length, while the shortest distance from it to T. P. 9 was at least 1,800 feet. It is thus apparent that while the nearer portions of the crest gave fairly favorable opportunities for accuracy, the probable error in location increases very rapidly after passing point 32, near the middle, the result being a location of T. P. 9 at a very considerable distance easterly from its probable true position with respect to the base, and with it, swinging the western arm of the Horseshoe. Again, points 25, 26 and 27 were determined by bearings from T. P. 9 and T. P. 8, and while the

triangles here formed are very favorable, any error in T. P. 9 must affect the accuracy of the result. But in the absence of landmarks, whereby a definite error could be determined, the lines have been plotted with great care, precisely as laid down on the original map, on the above basis.

For a comparison of the 1875 results the line between T. P. 1 and Terrapin station has been taken as a basis, and the curve plotted with care from the map cited above (p. 98).

In plotting the 1886 line, use was made of the co-ordinates furnished by Professor Woodward and given in Table VI, after transferring the origin from L. S. IV to T. P. 1, while portions defined by tangents were plotted from his map submitted herewith.

It will be observed that no attempt has been made upon the map to reconcile any discrepancies between different surveys. It has been deemed best to present the records precisely as originally made, using in each case the most reliable and favorable basis of comparison. Undoubtedly there are errors, but the extent thereof can not now be defined and any attempted correction of 1842 or 1875 lines would have to be upon grounds entirely supposititious. In the case of the 1886 survey the discrepancy is susceptible of ready explanation and remedy. There is no point definitely located on the 1886 line of the Horseshoe Falls between Nos. 12 and 13. The intervening line is defined only by the *tangents* shown on map. It is apparent that a line could be sketched between points 12 and 13, tangent to the lines shown, and every where outside of the 1890 line, without materially altering the general trend of the 1886 line, thus making the two surveys entirely consistent and showing the most probable contour for the year 1886. It is proper to state here that points 92 and 93 (1890), were clearly defined and that the results were as satisfactory as could have been expected, even with stationary signals for observation.

In instituting a definite quantitative comparison, the same principle has been adhered to, with a slight modification. To determine the recession, a line, termed a base, was drawn along the east side of the American Fall, parallel to the general direction of the crest. Through the northern ends of the Falls and of Luna island were drawn perpendiculars to this base, that portion of the crest between Luna and Goat islands being omitted on account of great discrepancies. The area contained between the base, perpendiculars and each crest line, were then measured with a planimeter, excepting always, *that where any other line passed east of, or above, the 1890 line, the latter was followed*

instead. The differences between any two of the areas thus obtained has been adopted as the nearest approximation now possible, to the area of recession between the dates of the two lines used.

The lengths of the crest lines as followed by the planimeter were then measured, and the mean crest length in any period assumed as the mean between the lengths at beginning and end.

To obtain the value of the mean recession during any period assumed as taking place all along the crest, the area measured was divided by the mean crest length for that period, and this mean recession divided by the number of years in the period would give the mean annual recession.

The results thus obtained are presented in Table VII.

The Horseshoe Falls curves were treated in a similar manner and the results are given in Table VIII, with an additional column giving "maximum recessions," *i. e.*, greatest distances between any two curves, along the line of most rapid recession for the period considered.

In the preparation of these tables and in the treatment of the entire subject, cognizance has been taken of the deep interest surrounding it, particularly in geological circles; of the differences in opinion as to the proper method of comparison, and especially of the importance of having the fullest records, on the ground and in the report, of stations occupied and of methods of procedure.

I desire to acknowledge my indebtedness to Mr. James Wilson, Superintendent of the Queen Victoria Niagara Falls Park for many courtesies and for personal assistance at times where simultaneous observations were required; to Mr. Thomas V. Welch, Superintendent of the New York State Reservation for frequent courtesies extended to myself and party and to Prof. R. S. Woodward for valuable information with reference to former surveys and as well for the courtesy through which I am enabled to present and preserve the complete records of his own.

Very respectfully submitted.

AUG. S. KIBBE,

Assistant Engineer in Charge.

APPENDIX.

DEPARTMENT OF THE INTERIOR:

UNITED STATES GEOLOGICAL SURVEY,
WASHINGTON, D. C., June 30, 1890. }

MR. AUG. S. KIBBE, *New York State Assistant Engineer, Albany, N. Y. :*

DEAR SIR.—In compliance with your request and by permission of Hon. J. W. Powell, Director United States Geological Survey, I send you herewith list of co-ordinates used and determined in a survey of Niagara Falls made by me in 1886 for the United States Geological Survey.

The first of these lists* gives the co-ordinates of certain points whose relative positions were fixed by the United States Lake Survey in 1875. These co-ordinates, obtained from the Lake Survey records through the courtesy of the Chief of Engineers, United States Army, were as a basis for my survey.

The second list† gives the co-ordinates of points determined by me, these points being chiefly along the crest lines of the Falls. In computing these co-ordinates the Lake Survey values of the azimuth and length of the line joining Lake Survey stations IV and V were adopted. The length of this line was checked, however, by means of a base measured along the bluff near Loretto convent.

The survey of 1886 was made at the request of my colleague, Mr. G. K. Gilbert of the Geological Survey, a few days before the Buffalo meeting (August 18 to 24, 1886) of the American Association for the Advancement of Science. Since it was desired to announce the principal results of the survey to the Section of Geology and Geography of the association at that meeting, the field work had to be done somewhat hastily. The method which seemed best suited to the circumstances of the work was to select a series of stations from which points on the crest lines of the Falls could be seen and to connect these stations by angular measures. The instrument used was a small meander transit reading to minutes of arc by a single vernier

* Table IV.

† Table VI.

An instrument of a higher grade would have been much more advantageous and would have insured better results, but it was the only one available at the time.

The points on the crests of the Falls determined by this survey varied considerably in respect to clearness of definition and ease and precision of fixture. Some of them were well-defined exposures of bare rock; some were less well-defined portions of rock seen through the curved sheet of falling water; some were indentations in such sheets, well-defined from any point of view but presenting different aspects from different points of view; and some were ephemeral sprays whose identification from different points of view was a matter of difficulty. In general it may be said that points on the American Fall and those near the ends of the Horseshoe Fall were most easily and accurately determined. On the other hand the upper and central portions of the Horseshoe Fall, over which the bulk of the water passes, were the most difficult to determine. The only practical way of locating these portions during the time at my disposal was by means of limiting tangents. But these afforded a low degree of precision for the obvious reason that tangents, through a common point of such a surface, can not be aligned from distant stations.

Most of the points of the crest line were observed from three or more stations and the resulting ordinates were in such cases more or less discrepant owing to errors in the angular measures and to the difference of phase mentioned above. The values of the ordinates given in the table are simple means of the computed values, the supposition being that the discrepancies from phase generally outweighed those in the angular measures. From an inspection of the individual, though not in general, independent values of the several co-ordinates, it is estimated that the probable error of either ordinate of a point on the crest lines does not, on the average, exceed ± 1.5 feet or ± 0.42 metres. A much greater probable error must be assigned, however, to the three points in the upper part of the Horseshoe Fall located by means of tangents as shown by the tracing of my map forwarded to you some time ago.

Very truly yours.

R. S. WOODWARD.

TABLES ACCOMPANYING REPORT OF THE SURVEY OF NIAGARA FALLS CREST LINES.

TABLE I.
PERMANENT MONUMENTS AT NIAGARA FALLS.

Designation.	DESCRIPTION.	Co-ordinates.			
T. P. No. 1	1842. Stone monument on Prospect point, five inches square and projecting about one inch above the ground. Marked thus \oplus	0.0	....	0.0	0.0
Luna	1886. Northwest corner post of pipe railing on northwest corner of Luna island. 1890. Same	S.		785.4	W. 482.6
T. P. No. 6	1842. On path following top of bluff along southern shore of Goat island, like T. P. No. 1, but projecting about seven inches, with a "B" cut into north side, which was changed, 1890, into a rude "6."	S.		2370.7	W. 990.4
L. S. V	1875. Hole in surface rock on southern shore of Goat island, near water's edge (not at all prominent) filled with lead; letters, "U. S." cut into rock. 1890. Small hole drilled into lead and brass screw one-half inch in diameter inserted, with top marked thus \oplus	S.		2146.3	W. 1233.1
Terrapin	1886. Hole in prominent rock, about four feet high, at end of wooden walk to platform where Terrapin Tower formerly stood. 1890. Brass bolt, one inch in diameter, expanded into hole and marked thus \oplus Word "TERRAPIN" rudely cut into rock. This station is supposed to coincide very nearly with the point used in 1875	S.		2044.2	W. 1465.5
Loretto	1886. Station employed for observation only, and not occupied, was the cross surmounting the cupola. 1890. Brass screw, one-half inch in diameter, set into tin deck of cupola of Loretto convent, directly under the centre of the cross. Top marked thus \oplus	S.		3671.4	W. 3623.4

TABLE I — PERMANENT MONUMENTS AT NIAGARA FALLS — (Concluded).

Designation.	DESCRIPTION.	Co-ordinates.			
A	1890. Brass bolt, one inch in diameter, expanded into the surface rock on western edge of roadway to the "Maid of the Mist" landing, about 100 feet south of the north end of the Canadian reservation, 3.6 feet from end of pipe railing running along the brink, and 4.3 feet from first cast-iron post of barb-wire fence separating the park from the roadway. Top marked thus \oplus	N.	1121.4	W.	995.2
B	1890. Brass bolt, one inch in diameter, expanded into the surface rock, near brink in the Canadian reservation, between pipe-railing and brink, 30.2 feet from northeastern corner of railing at "Rambler's Rest." Top marked thus \oplus	N.	788.5	W.	1451.8
C	1890. Stone monument about six inches square, marked \boxplus on top, C on side, in Canadian reservation, between pipe-railing and the brink, 25.4 feet northerly from the pipe of drinking fountain south of "Rambler's Rest"	N.	193.9	W.	1751.6
D	1890. Stone monument, like last, marked D on side, similarly placed, about 735 feet southwesterly along the brink from C	S.	458.16	W.	2090.38
E	1890. Brass screw, one-half inch in diameter, marked \oplus top, set into tin covered roof on southern parapet of Museum building, 2.51 feet from outside face of eastern wall and 2.15 feet from outside face of southern wall	S.	1117.0	W.	2397.2
F	1890. Brass screw, one-half inch in diameter, marked \oplus on top, set into platform around cupola of "Table Rock House," 23.3 feet from northeastern edge of main body of the more easterly of the two southern chimneys and 28.2 feet from northwestern edge of the more westerly one	S.	1876.5	W.	2617.8

G	1890. Brass bolt, one inch in diameter, marked \oplus on top, with letter G cut beside it, expanded into surface rock thirteen feet back from the crest of the "Horseshoe Falls," feet from the northeast corner of pump-house, just erected, and 262.5 feet from the southeastern corner of "Table Rock House"	S.	2156.8	W.	2536.3
H	1890. Stone monument, like "C," marked H on side, set into northern end of Cedar island, just north of gate house	S.	2899.2	W.	2848.3
I }	1890. Stone monuments like last, marked on sides with their designatory letters, set upon prominent projecting points along top of slope, just within fence marking western boundary of the Canadian reservation	S.	1602.5	W.	2773.2
K }		S.	1934.7	W.	2996.2
L }		S.	2338.0	W.	3261.3
M	1890. Stone monument like last, marked M on side; set into edge of gravel walk on southwestern side of Goat island, just east of platform at head of stairway to the Terrapin rocks	S.	1929.1	W.	1206.5
N	1890. Brass bolt, one inch in diameter, marked \oplus and N on top. Set into rock about one foot under the surface of lawn in the Canadian reservation. Surrounded by a four-inch glazed earthenware tile, with wooden cover, just south of superintendent's office, 34.9 feet from southwest corner of main building; 25.3 feet from southwest corner of south wing; 12.2 feet from southeast corner of south wing, and 18.3 feet from southeast corner of main building—all measurements made at base	N.	1021.88	W.	1462.09
O,	1890. Stone monument like C, marked O on side. Set into gravel walk, flush with surface, on the northwestern corner of Goat island, at head of stairway to Luna island, about 3.5 feet from the more westernly of two top posts in balustrade and about five feet from the second post in railing along the western brink of the island	S.	989.1	W.	597.1

TABLE II.

CO-ORDINATES OF POINTS AT NIAGARA FALLS, OTHER THAN MARKED
STATIONS AS DETERMINED IN 1890.

T. P. 1		0000.0		0000.0
1	S	14.4	W	79.5
2	S	92.2	W	158.6
3	S	125.5	W	110.9
4	S	130.0	W	131.5
5	S	148.7	W	125.1
6	S	166.7	W	147.0
7	S	197.5	W	164.8
8	S	220.5	W	188.4
9	S	234.2	W	187.6
10	S	260.5	W	189.7
11	S	319.1	W	202.1
12	S	336.7	W	183.0
13	S	347.4	W	199.5
14	S	379.7	W	196.0
15	S	407.1	W	216.3
16	S	434.4	W	221.7
17	S	455.0	W	212.8
18	S	487.6	W	255.8
19	S	516.0	W	251.8
20	S	558.9	W	272.0
21	S	590.9	W	299.1
22	S	615.4	W	316.4
23	S	631.0	W	327.0
24	S	653.2	W	347.9
25	S	677.6	W	382.2
26	S	715.1	W	364.5
27	S	739.8	W	438.8
28	S	770.1	W	476.1
29	S	785.3	W	485.6
30	S	842.9	W	530.5
31	S	868.2	W	548.9
32	S	878.9	W	553.8
33	S	889.4	W	572.8
34	S	894.0	W	584.7
35	S	905.5	W	591.8
36	S	919.4	W	608.1
37	S	958.0	W	629.0
38	S	972.5	W	644.0
39	S	996.2	W	663.6
40	S	1020.0	W	681.0
41	S	1102.8	W	742.7
42	S	1145.0	W	757.2
43	S	1178.0	W	753.6
44	S	1207.5	W	759.9
45	S	1215.3	W	773.3

TABLE II—(Continued).

46.....	S.....	1280.9	W.....	801.8
47.....	S.....	1355.3	W.....	826.4
48.....	S.....	1417.6	W.....	899.0
49.....	S.....	1476.3	W.....	924.3
50.....	S.....	1499.5	W.....	974.0
51.....	S.....	1619.1	W.....	1034.4
52.....	S.....	1651.6	W.....	1056.6
53.....	S.....	1671.2	W.....	1085.7
54.....	S.....	1769.0	W.....	1165.2
55.....	S.....	1856.9	W.....	1219.2
56.....	S.....	1917.6	W.....	1301.7
57.....	S.....	1942.7	W.....	1314.9
58.....	S.....	1958.4	W.....	1318.8
59.....	S.....	1968.7	W.....	1329.6
60.....	S.....	1979.8	W.....	1350.5
61.....	S.....	1982.9	W.....	1361.5
62.....	S.....	1986.1	W.....	1374.8
63.....	S.....	1994.5	W.....	1393.0
64.....	S.....	2019.9	W.....	1453.0
65.....	S.....	2033.0	W.....	1483.2
66.....	S.....	2046.7	W.....	1534.2
67.....	S.....	2053.8	W.....	1546.2
68.....	S.....	2067.4	W.....	1558.3
69.....	S.....	2089.7	W.....	1566.1
70.....	S.....	2105.0	W.....	1588.0
71.....	S.....	2134.4	W.....	1596.0
72.....	S.....	2149.2	W.....	1614.5
73.....	S.....	2165.6	W.....	1620.6
74.....	S.....	2171.2	W.....	1608.9
75.....	S.....	2204.9	W.....	1619.8
76.....	S.....	2226.0	W.....	1636.5
77.....	S.....	2271.7	W.....	1637.2
78.....	S.....	2286.6	W.....	1642.0
79.....	S.....	2348.2	W.....	1626.8
80.....	S.....	2375.1	W.....	1633.2
81.....	S.....	2395.0	W.....	1662.5
82.....	S.....	2424.1	W.....	1666.7
83.....	S.....	2499.8	W.....	1683.0
84.....	S.....	2556.9	W.....	1672.5
85.....	S.....	2610.4	W.....	1642.0
86.....	S.....	2651.8	W.....	1609.7
87.....	S.....	2704.3	W.....	1594.5
88.....	S.....	2792.4	W.....	1591.0
89.....	S.....	2848.5	W.....	1548.8
90.....	S.....	2940.8	W.....	1556.3
91.....	S.....	2973.9	W.....	1651.5
92.....	S.....	2894.2	W.....	1647.4
93.....	S.....	2923.6	W.....	1677.7
94.....	S.....	2946.2	W.....	1708.1

TABLE II—(Continued).

95.....	S.....	3012.7	W.....	1821.0
96.....	S.....	2942.4	W.....	2090.7
97.....	S.....	2863.2	W.....	2221.9
98.....	S.....	2832.7	W.....	2249.3
99.....	S.....	2815.8	W.....	2275.4
100.....	S.....	2772.9	W.....	2297.3
101.....	S.....	2719.1	W.....	2336.5
102.....	S.....	2692.0	W.....	2346.0
103.....	S.....	2647.0	W.....	2355.1
104.....	S.....	2625.4	W.....	2374.6
105.....	S.....	2553.0	W.....	2423.0
106.....	S.....	2513.0	W.....	2425.9
107.....	S.....	2480.4	W.....	2440.0
108.....	S.....	2443.0	W.....	2453.3
109.....	S.....	2415.6	W.....	2463.2
110.....	S.....	2390.7	W.....	2467.9
111.....	S.....	2390.7	W.....	2475.5
112.....	S.....	2367.1	W.....	2471.9
113.....	S.....	2359.6	W.....	2479.5
114.....	S.....	2305.4	W.....	2491.9
115.....	S.....	2266.2	W.....	2500.5
116.....	S.....	2214.0	W.....	2517.3
116a.....	S.....	2156.8	W.....	2523.3
116b.....	S.....	2083.3	W.....	2526.3
116c.....	S.....	2016.8	W.....	2533.8
116d.....	S.....	1941.8	W.....	2543.3
117.....	S.....	1929.0	W.....	2531.0
118.....	S.....	1848.6	W.....	2520.7
119.....	S.....	1796.9	W.....	2486.5
120.....	S.....	1742.7	W.....	2491.2
121.....	S.....	1709.1	W.....	2464.1
122.....	S.....	1653.5	W.....	2453.2
123.....	S.....	1614.8	W.....	2452.7
124.....	S.....	1370.9	W.....	2393.1
125.....	S.....	1264.6	W.....	2344.3
126.....	S.....	1140.9	W.....	2322.8
127.....	S.....	1082.7	W.....	2321.0
128.....	S.....	1001.7	W.....	2296.7
129.....	S.....	916.3	W.....	2265.1
130.....	S.....	647.5	W.....	2163.4
131.....	S.....	545.7	W.....	2125.9
132.....	S.....	491.5	W.....	2106.0
133.....	S.....	481.6	W.....	2078.4
134.....	S.....	439.2	W.....	2081.7
135.....	S.....	289.9	W.....	1971.9
136.....	S.....	215.6	W.....	1932.3
137.....	N.....	59.6	W.....	1803.7
138.....	N.....	182.7	W.....	1751.5
139.....	N.....	214.2	W.....	1748.9

TABLE II.—(Concluded).

140.....	N.....	219.9	W.....	1739.5
141.....	N.....	576.0	W.....	1614.3
142.....	N.....	658.1	W.....	1561.4
143.....	N.....	688.9	W.....	1522.1
144.....	N.....	722.2	W.....	1476.0
145.....	N.....	753.3	W.....	1466.5
146.....	N.....	821.5	W.....	1431.5
147.....	N.....	947.0	W.....	1348.9
148.....	N.....	1020.6	W.....	1290.6
149.....	N.....	1052.5	W.....	1249.0
150.....	N.....	1065.9	W.....	1209.0
151.....	N.....	1094.1	W.....	1097.8
152.....	N.....	1104.9	W.....	1023.0
153.....	N.....	1103.8	W.....	959.4
154.....	S.....	1827.2	W.....	1528.5
155.....	S.....	2039.9	W.....	1677.5

No. 1 is the southwest corner of wall at Prospect point.

No. 29 is the north end of Luna island.

No. 30 is the south end of Luna island.

No. 33 is the north end of Goat island.

No. 44 is the centre of Biddle stairs.

No. 58 is the south end of Goat island.

Nos. 116a, 116b, 116c and 116d were located by tape triangulation from line G. F., 116c being opposite circular corner of pipe rail.

No. 121 is the flag-pole on "hydraulic elevator," seventeen feet out from brink.

Nos. 154 and 155 are prominent rocks, No. 155 being sharply pyramidal.

TABLE IV.

CO-ORDINATES OF LAKE SURVEY STATIONS AT NIAGARA FALLS. (1875.)

POINTS.	Co-ordinates.			
		Metres.		Metres.
L. S., IV.....	North ...	000.0	East.....	000.0
L. S., V.....	North ...	103.2	East....	455.9
Terrapin	North ...	134.1	East....	385.0
Luna	North ...	516.1	East.....	685.4
T P., 1	North ...	756.5	East....	832.5

TABLE V. .

CO-ORDINATES OF MARKED STATIONS AS DETERMINED IN 1886.*

STATIONS.		Feet.		Feet.
L. S., IV.....	East.....	000.0	North ...	000.0
L. S., V.....	East.....	1495.7	North ...	338.6
Terrapin	East....	1262.1	North ...	441.1
Luna	East.....	2244.5	North ...	1698.9
T. P., 1	East. ...	2726.6	North ...	2482.2
T. P., 6	East. ...	1737.4	North ...	112.0
Loretto Convent.....	West ..	894.3	South ..	1181.7

* Not mentioned in Prof. Woodward's letter, having been transmitted to this department in 1889.

TABLE VI.

CO-ORDINATES OF POINTS ON CRESTS OF AMERICAN AND HORSESHOE FALLS,
AS DETERMINED IN 1886.

American Fall.

L. S., IV		0000.0		0000.0
1	E	2641.5	N	2470.7
2	E	2629.8	N	2446.1
3	E	2575.8	N	2355.8
4	E	2578.9	N	2333.7
5	E	2573.2	N	2286.0
6	E	2534.6	N	2259.7
7	E	2529.4	N	2247.5
8	E	2537.0	N	2222.3
9	E	2532.4	N	2216.2
10	E	2528.3	N	2143.8
11	E	2528.3	N	2103.3
12	E	2517.6	N	2050.5
13	E	2492.2	N	2022.3
14	E	2460.2	N	1966.2
15	E	2370.7	N	1835.1
16	E	2346.0	N	1817.6
17	E	2350.2	N	1797.1
18	E	2354.6	N	1789.2
19	E	2350.1	N	1771.9
20	E	2343.8	N	1759.4
21	E	2251.5	N	1719.2
22	E	2199.4	N	1638.4
23	E	2151.9	N	1596.6

TABLE VI—(Continued).

Horseshoe Fall.

L. S., IV		0000.0		000.0
1	E	1408.4	N	527.2
2	E	1265.4	N	461.6
3	E	1174.6	N	439.0
4	E	1144.4	N	350.7
5	E	1108.9	N	337.3
6	E	1121.6	N	291.1
7	E	1103.9	N	260.9
8	E	1097.7	N	127.7
9	E	1063.7	N	89.5
10	E	1050.4	S	53.6
11	E	1056.9	S	90.9
12	E	1076.7	S	135.9
13	E	744.9	S	443.8
14	E	614.6	S	372.4
15	E	603.2	S	363.8
16	E	531.2	S	297.5
17	E	379.6	S	208.2
18	E	296.5	S	61.4
19	E	295.1	N	3.4
20	E	262.7	N	69.8
21	E	253.0	N	140.9
22	E	238.9	N	281.2
23	E	233.0	N	374.8
24	E	225.9	N	389.5
25	E	219.5	N	424.7
26	E	213.7	N	444.0
27	E	205.1	N	470.9

RECESSION OF NIAGARA FALLS.

TABLE VII.—AMERICAN FALLS.

FROM	AREA RECORDED IN SQUARE FEET.			Crest length in feet.	MEAN CREST LENGTH IN FEET.			MEAN RECESSION IN FEET.			MEAN ANNUAL RECESSION IN FEET.		
	To 1875.	To 1886.	To 1890.		To 1875.	To 1886.	To 1890.	To 1875.	To 1886.	To 1890.	To 1875.	To 1886.	To 1890.
1842.....	25,100	26,300	32,900	1,080	1,030	1,070	24.87	26.04	30.75	0.74	0.59	0.64	
1875.....	.....	1,200	7,800	980	.....	960	.....	.....	1.25	7.64	.....	0.51
1886.....	.....	.....	6,600	940	.....	.....	.....	.....	.....	6.60	.....	1.65
1890.....	.....	.....	.....	1,050	.....	.....	.....	.....	.....	.....	.....	.....

TABLE VIII.—HORSESHOE FALLS.

[illegible]

LETTER

FROM

John Bogart, State Engineer and Surveyor, as to the Diversion of Water near Niagara Falls.

STATE OF NEW YORK:

OFFICE OF THE STATE ENGINEER AND SURVEYOR, }
ALBANY, N. Y., December 1, 1890. }

HON. ANDREW H. GREEN,

President of the Commissioners of the State Reservation at Niagara :

DEAR SIR.—In accordance with your request, I have considered the question of the effect upon the American Falls of the diversion of the water which may be taken by the tunnel now being constructed at Niagara. I have visited the Falls and the point where it is proposed to take the water from the river by a canal, this water afterwards passing through wheel-pits to the tunnel referred to. The entrance from the river to this canal is in the navigable part of the river, about $1\frac{3}{10}$ miles above the Falls and one mile above the head of Goat island. It is about half a mile above the entrance to the present hydraulic canal and entirely above the rapids. In my opinion the water taken into a canal at that point will not affect the American Falls specially, because the regular regimen of the river will become re-established before reaching the head of Goat island, where the currents to the American and to the Horseshoe Falls divide. The effect of the water flowing into this canal will therefore be distributed over the whole river, and will not at all be confined to one section of it.

What this effect will be, depends upon the relation of the volume of water taken into this canal to the volume of water flowing in the river.

The amount of flow over the Falls has been variously estimated in past years, but in 1868 the volume was measured by the corps of

engineers of the United States army in connection with the survey of the great lakes. The flow thus determined varies from 273,329 cubic feet per second to 280,757 cubic feet per second. It will, I think, be proper to call this 275,000 cubic feet per second, or 16,500,000 cubic feet per minute.

The amount that can be taken by the tunnel now under construction, if developed to its full capacity, may be 10,000 cubic feet per second.

This is $3\frac{6}{100}$ per cent of the whole flow.

The actual depth of the water at the crest of the Falls can not be accurately observed except near the sides of the Falls. The depth varies considerably at different points on the crest. A calculation based upon the observed facts gives $6\frac{2}{100}$ feet (or six feet two and three-fifths inches) as an approximate mean depth of water a very short distance (less than ten feet) above the edge or crest of the Falls when the present mean volume of water is passing over; and $6\frac{7}{100}$ feet (or six feet and four-fifths of an inch) as the depth at the same point when the volume shall be reduced by the amount that can be taken by the tunnel referred to.

Therefore the depth of water along the whole Falls, just above the crest, may be reduced one and four-fifth inches by the diversion of water into the tunnel.

From the operation of a well-known hydraulic law the depth of water directly over the crest will be somewhat less, the velocity being greater; but the decrease of depth at that point, by the diversion of the water, would also be less.

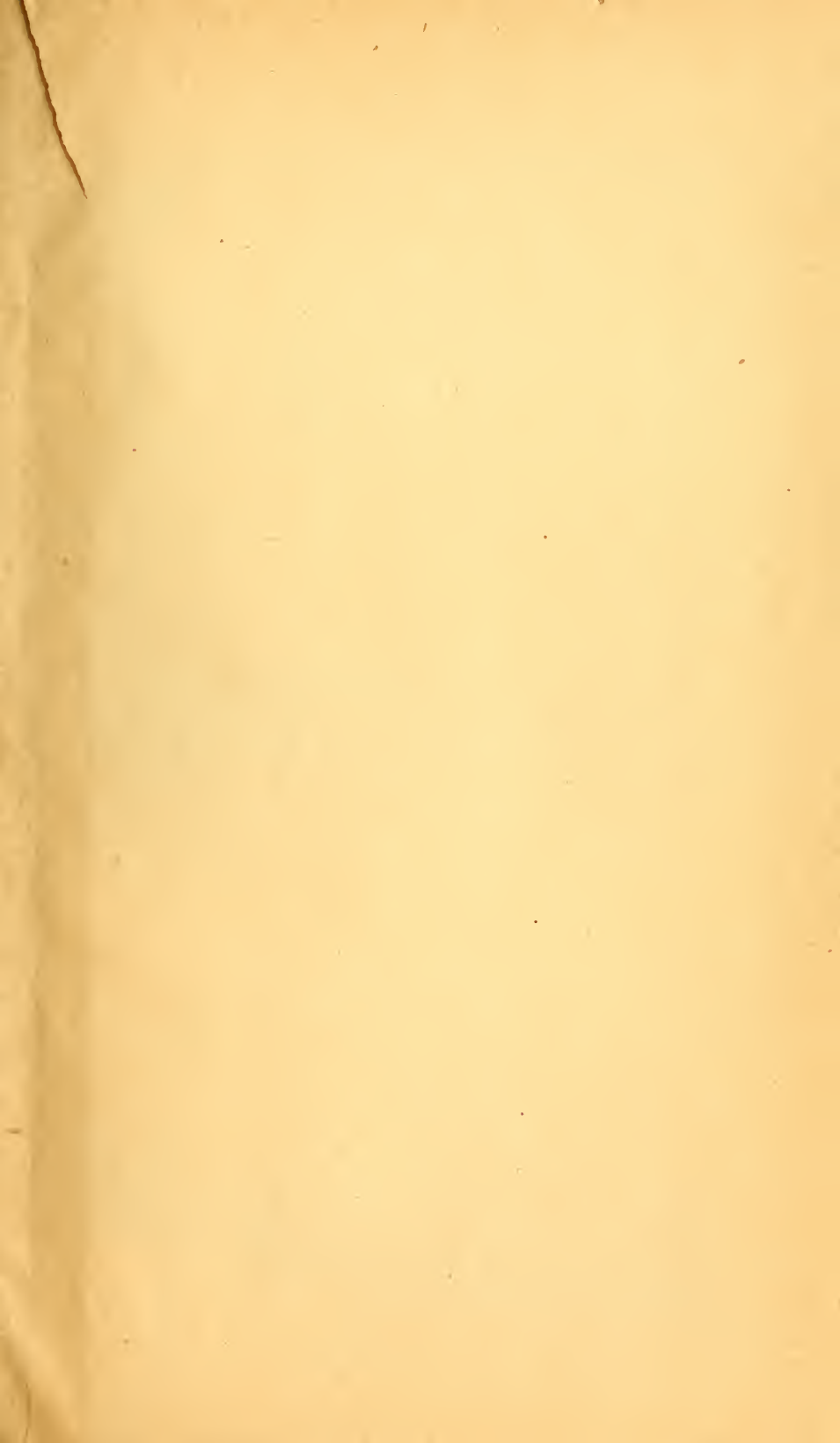
It might be suggested that, as the proposed tunnel may divert $3\frac{6}{100}$ per cent of the total volume of water, the depth at the Falls would be decreased by the same percentage; that is, $3\frac{6}{100}$ per cent of $6\frac{2}{100}$ feet, which would give a decrease of two and seven-tenths inches. But, in fact, the decreased volume will give a decreased velocity, and therefore a greater relative depth at the crest. I therefore think that one and four-fifths inches is the probable amount of the mean reduction in depth at the Falls to be caused by the tunnel diversion.

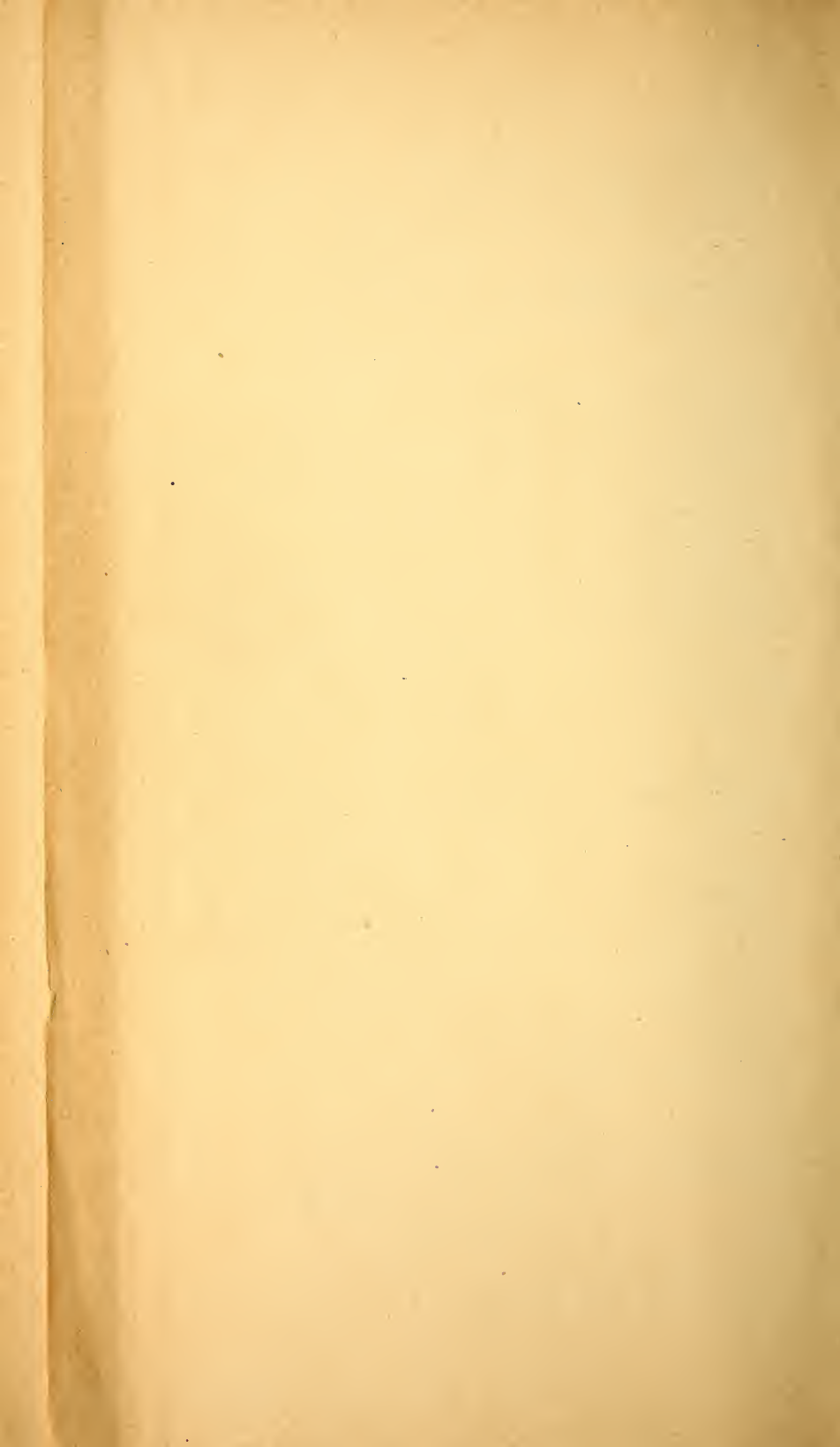
In conclusion, it is my opinion that the amount of water that can be taken through this tunnel will not affect the depth of water flowing over the Falls to an extent that will be visible.

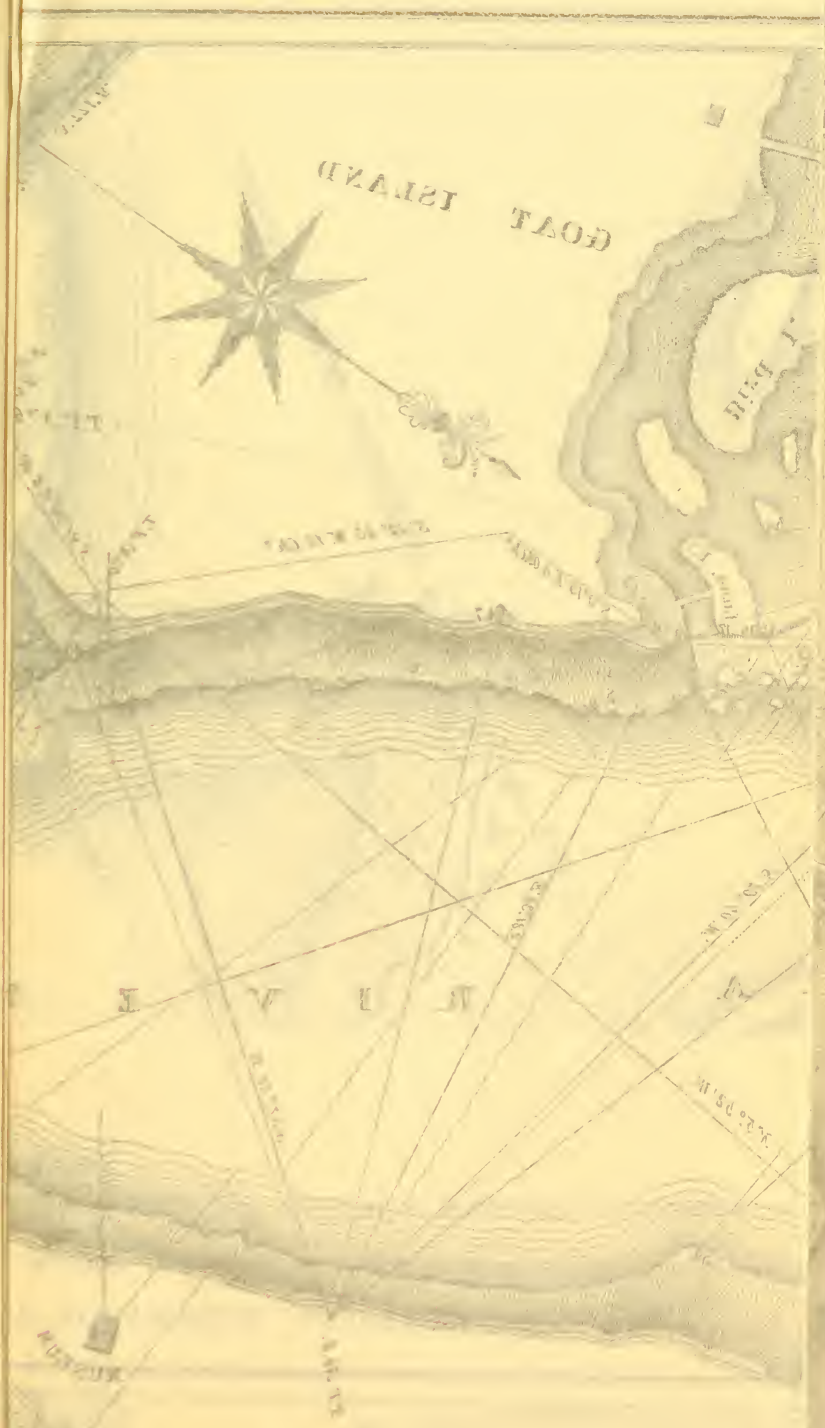
Very respectfully.

JOHN BOGART,

State Engineer and Surveyor.







CREST LINES or NIAGARA FALLS

AND NEIGHBORING BLUFFS.

From Surveys under the Direction of
JOHN BOGART STATE ENGINEER & SURVEYOR,
STATE OF NEW YORK.
1890.

Together with the Results of Former
Trigonometrical Surveys, 1842-1875-1886

100 90 80 70 60 50 40 30 20 10 0 METRES

100 25 50 75 100 125 150 175 200 225 250 275 300 FEET

Surveys made in February, 1890,
by
Aug. S. Kibbe, Assistant Engineer in charge.



--- denotes the contour of 1842, from survey by State Geologist, State of New York
 " " " " 1875 " " " United States Lake Survey
 " " " " 1886 " " " United States Geological Survey.
 " " " " 1890 " " " State Engineer, State of New York.
 " approximate shore lines, not surveyed in 1890.
 " station permanently marked.
 Magnetic declination, February, 1890, $4^{\circ}03'02''$ N.

CREST LA

or

NIA GARA

AND NEIGHBORING

FROM STICKER AND

JOHN BOCHET STATE ENGINEER

STATE OF NEW

1880

TOGETHER WITH THE

TRIGONOMETRIC SURVEY

OF THE

STATE OF NEW

YORK

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